HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	947	218	0	0	0	21	0	646	143	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.97				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2449				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2449				
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)	1018	234	0	0	0	23	0	695	154	0	0	0
RTOR Reduction (vph)	355	91	0	0	0	22	0	19	0	0	0	0
Lane Group Flow (vph)	266	540	0	0	0	1	0	830	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	23%	17%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	24.2	24.2				2.5		31.3				
Effective Green, g (s)	24.7	24.7				1.5		31.8				
Actuated g/C Ratio	0.35	0.35				0.02		0.45				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	571	587				27		1113				
v/s Ratio Prot								c0.34				
v/s Ratio Perm	0.16	0.33				c0.00						
v/c Ratio	0.47	0.92				0.05		0.75				
Uniform Delay, d1	17.5	21.7				33.6		15.8				
Progression Factor	1.25	0.31				1.00		1.00				
Incremental Delay, d2	1.6	14.7				0.3		2.8				
Delay (s)	23.6	21.4				33.9		18.5				
Level of Service	C	C				C		B				
Approach Delay (s)		22.5			33.9			18.5			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	21	0	0	158	18	45	1577	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1631			4674				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1270			1631			4674				
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)	17	22	0	0	166	19	47	1660	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	180	0	0	1713	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	16%	5%	4%	11%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		13.2			13.2			47.8				
Effective Green, g (s)		13.7			13.7			48.3				
Actuated g/C Ratio		0.20			0.20			0.69				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		249			319			3225				
v/s Ratio Prot					c0.11							
v/s Ratio Perm		0.03						0.37				
v/c Ratio		0.16			0.56			0.53				
Uniform Delay, d1		23.4			25.5			5.3				
Progression Factor		1.03			1.00			0.99				
Incremental Delay, d2		0.3			2.3			0.4				
Delay (s)		24.4			27.7			5.6				
Level of Service		C			C			A				
Approach Delay (s)		24.4			27.7			5.6			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	64	1629	96	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1712	1504		4340				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4340				
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)	95	152	0	0	86	120	67	1715	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	16	0	8	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	80	0	1875	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	11%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.3			17.3	17.3		44.2				
Effective Green, g (s)		17.8			17.8	17.8		44.2				
Actuated g/C Ratio		0.25			0.25	0.25		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		316			435	382		2740				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.43				
v/c Ratio		0.78			0.22	0.21		0.68				
Uniform Delay, d1		24.3			20.6	20.6		8.4				
Progression Factor		0.93			1.00	1.00		2.07				
Incremental Delay, d2		11.1			0.3	0.3		1.3				
Delay (s)		33.7			20.9	20.8		18.6				
Level of Service		C			C	C		B				
Approach Delay (s)		33.7			20.9			18.6			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	76	31	0	0	71	32	28	1625	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1785			4194				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4194				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	87	36	0	0	82	37	32	1868	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	12	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	107	0	0	1949	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	11%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.5			11.5			50.0				
Effective Green, g (s)		12.0			12.0			50.0				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		227			306			2996				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.09						0.46				
v/c Ratio		0.54			0.35			0.65				
Uniform Delay, d1		26.5			25.6			5.3				
Progression Factor		1.60			1.00			0.23				
Incremental Delay, d2		2.6			0.7			0.8				
Delay (s)		45.0			26.2			2.1				
Level of Service		D			C			A				
Approach Delay (s)		45.0			26.2			2.1			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	233	25	0	0	32	18	54	1799	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4201				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4201				
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)	248	27	0	0	34	19	57	1914	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	7	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	275	0	0	46	0	0	1991	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	11%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.4			20.4			39.6				
Effective Green, g (s)		20.9			20.9			41.1				
Actuated g/C Ratio		0.30			0.30			0.59				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		315			423			2467				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.47				
v/c Ratio		0.87			0.11			0.81				
Uniform Delay, d1		23.3			17.8			11.3				
Progression Factor		0.67			1.00			0.60				
Incremental Delay, d2		22.1			0.1			2.3				
Delay (s)		37.7			17.9			9.2				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.9			9.2			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
309: S "I" Street & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1771	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1374			4202				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1374			4202				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	60	17	0	0	8	11	25	2012	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	10	0	0	2054	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	11%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		151			183			3164				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.49				
v/c Ratio		0.51			0.06			0.65				
Uniform Delay, d1		28.2			26.5			4.2				
Progression Factor		0.83			1.00			0.21				
Incremental Delay, d2		2.6			0.1			0.6				
Delay (s)		26.1			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		26.1			26.6			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
310: S "I" Street & W Wishkah Street #1011

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	56	37	34	35	0	0	0	0	17	1478	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4196	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1185						4196	
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)	0	62	41	38	39	0	0	0	0	19	1642	40
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	80	0	0	77	0	0	0	0	0	1699	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	11%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.5			8.5						53.0	
Effective Green, g (s)		9.0			9.0						53.0	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		181			152						3177	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.06						0.40	
v/c Ratio		0.44			0.51						0.53	
Uniform Delay, d1		28.2			28.4						3.5	
Progression Factor		1.00			0.98						0.65	
Incremental Delay, d2		1.7			2.6						0.6	
Delay (s)		29.9			30.5						2.8	
Level of Service		C			C						A	
Approach Delay (s)		29.9			30.5			0.0			2.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	145	35	24	68	0	0	0	0	8	1337	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1451			1471						4149	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1451			1325						4149	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	158	38	26	74	0	0	0	0	9	1453	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	181	0	0	100	0	0	0	0	0	1540	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	12%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		13.9			13.9						46.1	
Effective Green, g (s)		14.4			14.4						47.6	
Actuated g/C Ratio		0.21			0.21						0.68	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		298			273						2821	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.08						0.37	
v/c Ratio		0.61			0.37						0.55	
Uniform Delay, d1		25.2			23.9						5.7	
Progression Factor		1.00			0.96						0.23	
Incremental Delay, d2		3.5			0.7						0.7	
Delay (s)		28.7			23.8						2.0	
Level of Service		C			C						A	
Approach Delay (s)		28.7			23.8			0.0			2.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
312: S "K" Street & W Wishkah Street #1011

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1352	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1448			1471						4162	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1448			1339						4162	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	82	22	17	49	0	0	0	0	21	1470	27
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	87	0	0	66	0	0	0	0	0	1517	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	12%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.4			8.4						53.1	
Effective Green, g (s)		8.9			8.9						53.1	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		184			170						3157	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.36	
v/c Ratio		0.47			0.39						0.48	
Uniform Delay, d1		28.4			28.1						3.2	
Progression Factor		1.00			0.49						0.21	
Incremental Delay, d2		1.9			1.4						0.4	
Delay (s)		30.3			15.3						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.3			15.3			0.0			1.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	104	15	57	84	0	0	0	0	131	1215	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1831			1826						4319	
Flt Permitted		1.00			0.85						1.00	
Satd. Flow (perm)		1831			1577						4319	
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)	0	109	16	60	88	0	0	0	0	138	1279	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	117	0	0	148	0	0	0	0	0	1447	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	12%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		536			462						2561	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.33	
v/c Ratio		0.22			0.32						0.56	
Uniform Delay, d1		18.7			19.3						8.7	
Progression Factor		1.00			0.99						0.82	
Incremental Delay, d2		0.9			1.7						0.8	
Delay (s)		19.6			20.9						8.0	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.9			0.0			8.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
317: Sumner Avenue/N Alder Street/Lincoln Street #1011 & W Wishkah Street #1011

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	28	163	0	0	0	0	21	513	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.94	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1327						2302	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1327						2302	1400
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)	0	0	0	30	173	0	0	0	0	22	546	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	88	152
Lane Group Flow (vph)	0	0	0	0	203	0	0	0	0	0	863	279
Heavy Vehicles (%)	2%	2%	2%	64%	5%	2%	2%	2%	2%	0%	31%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					16.2						44.8	44.8
Effective Green, g (s)					16.7						45.3	45.3
Actuated g/C Ratio					0.24						0.65	0.65
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					317						1490	906
v/s Ratio Prot												
v/s Ratio Perm					0.15						0.37	0.20
v/c Ratio					0.64						0.58	0.31
Uniform Delay, d1					24.0						7.0	5.4
Progression Factor					0.83						0.86	0.27
Incremental Delay, d2					4.2						1.4	0.8
Delay (s)					24.2						7.4	2.2
Level of Service					C						A	A
Approach Delay (s)		0.0			24.2			0.0			5.8	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1109	22	0	0	0	0	0	0	19	502	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3112									2274	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3112									2274	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1275	25	0	0	0	0	0	0	22	577	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	1299	0	0	0	0	0	0	0	0	595	0
Heavy Vehicles (%)	0%	4%	10%	2%	2%	2%	2%	2%	2%	0%	36%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		36.1									24.9	
Effective Green, g (s)		36.6									25.4	
Actuated g/C Ratio		0.52									0.36	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1627									825	
v/s Ratio Prot		c0.42										
v/s Ratio Perm											0.26	
v/c Ratio		0.80									0.72	
Uniform Delay, d1		13.7									19.2	
Progression Factor		0.82									1.44	
Incremental Delay, d2		3.6									2.6	
Delay (s)		14.8									30.4	
Level of Service		B									C	
Approach Delay (s)		14.8			0.0			0.0			30.4	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1461	561	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1077			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1077			
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)	124	692	0	0	0	0	0	1538	591	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	804	0	0	0	0	0	1538	554	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	20%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		18.8						42.7	42.7			
Effective Green, g (s)		18.8						43.2	43.2			
Actuated g/C Ratio		0.27						0.62	0.62			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1229						1892	665			
v/s Ratio Prot								0.50				
v/s Ratio Perm		0.18							c0.51			
v/c Ratio		0.65						0.81	0.83			
Uniform Delay, d1		22.7						10.3	10.6			
Progression Factor		0.87						1.78	1.91			
Incremental Delay, d2		1.2						3.2	9.6			
Delay (s)		21.0						21.5	29.8			
Level of Service		C						C	C			
Approach Delay (s)		21.0			0.0			23.8			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	717	411	76	1407	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.95			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3047			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3047			2943				
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)	0	0	0	0	739	424	78	1451	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1145	0	0	1523	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	16%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					24.0			37.0				
Effective Green, g (s)					24.5			37.5				
Actuated g/C Ratio					0.35			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1066			1577				
v/s Ratio Prot					c0.38							
v/s Ratio Perm								0.52				
v/c Ratio					1.07			0.97				
Uniform Delay, d1					22.8			15.6				
Progression Factor					1.00			0.75				
Incremental Delay, d2					49.7			11.1				
Delay (s)					72.4			22.8				
Level of Service					E			C				
Approach Delay (s)		0.0			72.4			22.8			0.0	
Approach LOS		A			E			C			A	

Intersection Summary			
HCM Average Control Delay	44.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1282	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2948									4180	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4180	
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)	0	290	45	0	0	0	0	0	0	394	1378	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	50	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1722	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	12%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.7									48.3	
Effective Green, g (s)		13.2									48.8	
Actuated g/C Ratio		0.19									0.70	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		556									2914	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.41	
v/c Ratio		0.56									0.59	
Uniform Delay, d1		25.8									5.5	
Progression Factor		1.00									0.76	
Incremental Delay, d2		1.3									0.7	
Delay (s)		27.1									4.9	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			4.9	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	488	296	0	0	0	0	0	1272	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.98						1.00	
Satd. Flow (prot)				1068	3014						4415	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1068	3014						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	530	322	0	0	0	0	0	1383	68
RTOR Reduction (vph)	0	0	0	23	23	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	0	0	258	548	0	0	0	0	0	1444	0
Heavy Vehicles (%)	2%	2%	2%	23%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				20.7	20.7						40.3	
Effective Green, g (s)				21.2	21.2						40.8	
Actuated g/C Ratio				0.30	0.30						0.58	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				323	913						2573	
v/s Ratio Prot				c0.24	0.18						c0.33	
v/s Ratio Perm												
v/c Ratio				0.80	0.60						0.56	
Uniform Delay, d1				22.4	20.8						9.1	
Progression Factor				0.96	1.04						1.00	
Incremental Delay, d2				1.3	0.1						0.9	
Delay (s)				22.8	21.8						9.9	
Level of Service				C	C						A	
Approach Delay (s)		0.0			22.1			0.0			9.9	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.7%	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)	11	1238	36	28	1027	2	349	8	18	17	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.98	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3311		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3125		1727	3311		1681	1672			1762	
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)	13	1456	42	33	1208	2	411	9	21	20	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1510	0	33	1210	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	9%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.3		5.4	80.7		17.3	17.3			5.0	
Effective Green, g (s)		72.3		5.4	81.7		18.3	18.3			6.0	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1915		79	2292		261	259			90	
v/s Ratio Prot				0.02	c0.37		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.53		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.8		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.56		1.00	1.00			1.00	
Incremental Delay, d2		3.4		2.8	0.7		22.4	19.9			1.7	
Delay (s)		20.5		59.5	5.6		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.5			7.0			69.6			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1575	102	53	1079	0	215	8	109	51	19	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3312		1727	3312		1665	1552			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3312		1727	3312		1665	1552			1751	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	1641	106	55	1124	0	224	8	114	53	20	25
RTOR Reduction (vph)	0	3	0	0	0	0	0	66	0	0	13	0
Lane Group Flow (vph)	26	1744	0	55	1124	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	9%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.3		7.6	66.3		14.5	14.5			11.6	
Effective Green, g (s)	6.6	66.3		7.6	67.3		15.5	15.5			12.6	
Actuated g/C Ratio	0.06	0.56		0.06	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1861		111	1889		219	204			187	
v/s Ratio Prot	0.02	c0.53		0.03	c0.34		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.27	0.94		0.50	0.60		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.9		53.3	16.5		49.9	47.6			49.5	
Progression Factor	0.78	0.60		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	8.6		2.5	1.4		21.0	2.2			2.1	
Delay (s)	42.3	22.9		55.9	17.9		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		23.2			19.6			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	963	3	516	903	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.93	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3176		3002	1491		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3176		3002	1491		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1189	4	637	1115	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1193	0	1195	557	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	16%	7%	7%	16%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	39.2		40.5	91.7		40.5
Effective Green, g (s)	41.2		42.5	91.7		42.5
Actuated g/C Ratio	0.45		0.46	1.00		0.46
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1427		1391	1491		1231
v/s Ratio Prot	c0.38		c0.40	0.37		0.14
v/s Ratio Perm						
v/c Ratio	0.84		0.86	0.37		0.31
Uniform Delay, d1	22.3		21.9	0.0		15.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	4.3		5.4	0.7		0.1
Delay (s)	26.6		27.4	0.7		15.5
Level of Service	C		C	A		B
Approach Delay (s)	26.6		18.9		15.5	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	91.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	20	0	0	8	19	635	1	3	340	55
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	21	0	0	8	20	668	1	3	358	58
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1117	1110	394	1096	1138	671	422			670		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1117	1110	394	1096	1138	671	422			670		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	178	205	655	182	197	459	1136			919		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	676	3	416
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	655	459	1136	1136	919	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.24
Queue Length 95th (ft)	2	1	1	1	0	0
Control Delay (s)	10.7	13.0	8.2	0.3	8.9	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.0	0.5		0.1	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	38.6%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
332: S M Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	24	1	10	0	2	4	14	590	2	2	292	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	26	1	11	0	2	4	15	634	2	2	314	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1004	1001	330	995	1015	635	345			637		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1004	1001	330	995	1015	635	345			637		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	98	100	99	99	99			100		
cM capacity (veh/h)	216	240	714	218	236	480	1219			947		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	637	2	345
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	270	357	1219	1700	947	1700
Volume to Capacity	0.14	0.02	0.01	0.37	0.00	0.20
Queue Length 95th (ft)	12	1	1	0	0	0
Control Delay (s)	20.5	15.3	8.0	0.0	8.8	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	20.5	15.3	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	2	393	2	2	222	164
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	2	452	2	2	255	189
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	818	813	349	721	906	453	444			454		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	818	813	349	721	906	453	444			454		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	92	100	100	100	98	99	100			100		
cM capacity (veh/h)	289	314	698	329	266	589	1127			1117		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	454	2	444
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	189
cSH	314	351	1127	1700	1117	1700
Volume to Capacity	0.08	0.03	0.00	0.27	0.00	0.26
Queue Length 95th (ft)	7	2	0	0	0	0
Control Delay (s)	17.5	15.6	8.2	0.0	8.2	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	17.5	15.6	0.0		0.0	
Approach LOS	C	C				

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	36.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	370	30	0	0	0	1	82	1	2	227	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	389	32	0	0	0	1	86	1	2	239	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			421			539	405	405	449	421	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			421			539	405	405	449	421	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	84	100	100	54	99
cM capacity (veh/h)	1604			1149			288	536	648	455	524	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	421	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	532	539
Volume to Capacity	0.00	0.00	0.17	0.47
Queue Length 95th (ft)	0	0	15	63
Control Delay (s)	0.0	0.0	13.1	17.6
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.1	17.6
Approach LOS			B	C

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	573	8	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	599	1	3	616	9	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1222	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1222	599
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		95	99
cM capacity (veh/h)			948		159	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	619	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	181
Volume to Capacity	0.35	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	26.1
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	26.1
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	550	0	2	598	10	0	1	0	8	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	598	0	2	650	11	0	1	0	9	2	8
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			601			1288	1284	603	1279	1279	657
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			601			1288	1284	603	1279	1279	657
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	94	99	98
cM capacity (veh/h)	912			959			136	164	500	138	161	457

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	663	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	912	959	164	198
Volume to Capacity	0.01	0.00	0.01	0.09
Queue Length 95th (ft)	1	0	1	8
Control Delay (s)	0.3	0.1	27.1	25.1
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	27.1	25.1
Approach LOS			D	D

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	553	1	1	593	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	601	1	1	645	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	646			602			1252	1252	602	1252	1252	645
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	646			602			1252	1252	602	1252	1252	645
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	99	100	100
cM capacity (veh/h)	925			961			148	172	500	148	172	472

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	603	647	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	925	961	229	226
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	20.9	21.1
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	20.9	21.1
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	468	34	186	468	11	76	2	164	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	514	37	204	514	12	84	2	180	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			552			1599	1571	535	1749	1584	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			552			1599	1571	535	1749	1584	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			70			0	97	67	43	98	94
cM capacity (veh/h)	1021			691			60	75	548	33	72	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	602	731	266	54
Volume Left	51	204	84	19
Volume Right	37	12	180	34
cSH	1021	691	151	83
Volume to Capacity	0.05	0.30	1.76	0.65
Queue Length 95th (ft)	4	31	487	76
Control Delay (s)	1.3	7.3	419.0	107.0
Lane LOS	A	A	F	F
Approach Delay (s)	1.3	7.3	419.0	107.0
Approach LOS			F	F

Intersection Summary			
Average Delay	74.6		
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
354: W Wishkah Street & S Garfield St

8/17/2009

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	649	0	0	27	664
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	705	0	0	29	722
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			780	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			780	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			357	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	705	29	722
Volume Left	0	29	0
Volume Right	705	0	0
cSH	1700	1578	1700
Volume to Capacity	0.41	0.02	0.42
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	662	5	0	192	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	727	5	0	211	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1458	1458	1460	0
vC1, stage 1 conf vol			1458	1458	0	
vC2, stage 2 conf vol			0	0	1460	
vCu, unblocked vol	0		1458	1458	1460	0
tC, single (s)	4.2		7.1	7.3	6.5	6.2
tC, 2 stage (s)			6.1	6.3	5.5	
tF (s)	2.3		3.5	4.8	4.0	3.3
p0 queue free %	54		100	0	100	100
cM capacity (veh/h)	1597		80	47	95	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	485	248	211
Volume Left	485	242	0
Volume Right	0	5	0
cSH	1597	1597	47
Volume to Capacity	0.46	0.46	4.46
Queue Length 95th (ft)	61	61	Err
Control Delay (s)	9.1	9.0	Err
Lane LOS	A	A	F
Approach Delay (s)	9.1		Err
Approach LOS			F

Intersection Summary			
Average Delay	2242.0		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
356: N Monroe Street & W Heron Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	21	3	0	0	169	7	12	830	20	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	3	0	0	192	8	14	943	23	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	603	993	0	984	982	483	0			966		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	603	993	0	984	982	483	0			966		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	99	100	100	22	99	99			100		
cM capacity (veh/h)	136	245	1091	201	247	532	1600			709		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	485	494
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	144	253	1600	1700
Volume to Capacity	0.19	0.79	0.01	0.29
Queue Length 95th (ft)	17	149	1	0
Control Delay (s)	35.6	57.6	0.3	0.0
Lane LOS	E	F	A	
Approach Delay (s)	35.6	57.6	0.1	
Approach LOS	E	F		

Intersection Summary				
Average Delay		10.5		
Intersection Capacity Utilization		46.6%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
357: N Lincoln Street & W Heron Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	6	0	0	16	2	5	844	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	6	0	0	17	2	5	879	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	460	895	2	897	892	442	0			884		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460	895	2	897	892	442	0			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	94	100	100			100		
cM capacity (veh/h)	464	281	1086	233	282	569	1593			761		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	445	445
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	357	299	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.26
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	15.5	17.8	0.1	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.5	17.8	0.1	
Approach LOS	C	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	31	797	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	105	9	36	927	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	600	1013	4	1011	1009	471	3			938		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600	1013	4	1011	1009	471	3			938		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	94	97	100	100	49	98	98			100		
cM capacity (veh/h)	200	204	1019	162	205	492	1592			724		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	499	470
Volume Left	12	0	36	0
Volume Right	0	9	0	7
cSH	202	215	1592	1700
Volume to Capacity	0.09	0.53	0.02	0.28
Queue Length 95th (ft)	8	69	2	0
Control Delay (s)	24.7	39.2	0.7	0.0
Lane LOS	C	E	A	
Approach Delay (s)	24.7	39.2	0.4	
Approach LOS	C	E		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
359: N Washington Street & W Wishkah Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	34	0	0	0	0	3	509	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	4	100	40	0	0	0	0	4	606	10
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.88	0.88	0.88	0.88	0.88		0.88					
vC, conflicting volume	641	628	311	328	633	7	618			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	308	293	0	0	299	7	283			7		
tC, single (s)	7.8	6.8	7.2	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.4	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	92	100	100			100		
cM capacity (veh/h)	481	510	912	853	527	1055	1116			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	140	307	312
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	559	724	1541	1700
Volume to Capacity	0.03	0.19	0.00	0.18
Queue Length 95th (ft)	2	18	0	0
Control Delay (s)	11.7	11.2	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.7	11.2	0.1	
Approach LOS	B	B		

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
360: N Lincoln Street & W Wishkah Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	570	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	613	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	650	642	315	340	648	4	626			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	642	315	340	648	4	626			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	347	392	687	575	389	1080	952			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	317	319
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	418	481	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.9	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.9	13.0	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		35.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	525	65	0	30	1	121	41	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	559	69	0	32	1	129	44	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	628			0			643	621	316	326	655	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628			0			643	621	316	326	655	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	77	89	100
cM capacity (veh/h)	950			1565			329	403	686	565	383	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	293	348	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	408	504
Volume to Capacity	0.01	0.20	0.08	0.34
Queue Length 95th (ft)	1	0	7	38
Control Delay (s)	0.4	0.0	14.6	15.8
Lane LOS	A		B	C
Approach Delay (s)	0.2		14.6	15.8
Approach LOS			B	C

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	176	0	176	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	191	0	191	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	240			29			165	174	145	261	261	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240			29			165	174	145	261	261	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	67	100	99	100	100
cM capacity (veh/h)	1326			1584			804	574	908	504	634	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	240	191	5
Volume Left	0	0	0	5
Volume Right	17	191	0	0
cSH	1326	1584	574	504
Volume to Capacity	0.00	0.00	0.33	0.01
Queue Length 95th (ft)	0	0	36	1
Control Delay (s)	0.0	0.0	14.4	12.2
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	14.4	12.2
Approach LOS			B	B

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	233	1	1	10	220	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	253	1	1	11	239	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	253	240	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	253	240	240			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	66	100	100			
cM capacity (veh/h)	740	799	1338			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	254	12	240
Volume Left	253	1	0
Volume Right	1	0	1
cSH	740	1338	1700
Volume to Capacity	0.34	0.00	0.14
Queue Length 95th (ft)	38	0	0
Control Delay (s)	12.4	0.7	0.0
Lane LOS	B	A	
Approach Delay (s)	12.4	0.7	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
371: Port Industrial Road & W 1st Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	507	6	16	3	5	5	0	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	39	452	5	5	583	7	18	3	6	6	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	583			456			1172	1124	454	1133	1130	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			456			1172	1124	454	1133	1130	586
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			87	98	99	96	100	90
cM capacity (veh/h)	949			1115			141	189	588	163	187	494

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	590	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	949	1700	1115	1700	174	406
Volume to Capacity	0.04	0.27	0.00	0.35	0.16	0.13
Queue Length 95th (ft)	3	0	0	0	14	11
Control Delay (s)	9.0	0.0	8.2	0.0	29.5	15.2
Lane LOS	A		A		D	C
Approach Delay (s)	0.7		0.1		29.5	15.2
Approach LOS					D	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
372: Port Industrial Road & Myrtle Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	446	110	8	14	38	52	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	361	11	16	485	120	9	15	41	57	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	604			372			1013	1040	366	1029	986	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	604			372			1013	1040	366	1029	986	545
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			95	93	94	69	97	95
cM capacity (veh/h)	936			1144			186	212	653	184	240	541

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	621	65	92
Volume Left	18	16	9	57
Volume Right	11	120	41	29
cSH	936	1144	359	237
Volume to Capacity	0.02	0.01	0.18	0.39
Queue Length 95th (ft)	2	1	16	44
Control Delay (s)	0.6	0.4	17.2	29.5
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	17.2	29.5
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	288	2	4	0	339	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	324	2	4	0	381	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381			326			356	737	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			326			356	737	325	406	357	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	89	95	100	100	100
cM capacity (veh/h)	1151			596			591	340	716	481	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	381	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	381	33
cSH	1151	1700	596	1700	453
Volume to Capacity	0.01	0.19	0.01	0.22	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.2	0.0	11.1	0.0	14.4
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.1		14.4
Approach LOS					B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/17/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	39	0	2	0	0	0	31	50	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	0	2	0	0	0	36	59	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		112	94	0	170	93	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		112	94	0	170	93	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	95	100	95	100
cM capacity (veh/h)	1554			1620		809	767	1076	711	777	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	48	0	95	40
Volume Left	46	0	0	2
Volume Right	2	0	59	0
cSH	1554	1700	932	773
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	332	4	15	450	31	10	7	24	32	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1770			1844			1759	1538		1747	
Flt Permitted		0.98			0.99			0.79	1.00		0.80	
Satd. Flow (perm)		1744			1824			1429	1538		1446	
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)	12	357	4	16	484	33	11	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	373	0	0	531	0	0	19	3	0	44	0
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		24.1			24.1			4.3	4.3		4.3	
Effective Green, g (s)		24.6			24.6			4.8	4.8		4.8	
Actuated g/C Ratio		0.66			0.66			0.13	0.13		0.13	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1147			1200			183	197		186	
v/s Ratio Prot												
v/s Ratio Perm		0.21			c0.29			0.01	0.00		c0.03	
v/c Ratio		0.32			0.44			0.10	0.02		0.24	
Uniform Delay, d1		2.8			3.1			14.4	14.2		14.7	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.3	0.0		0.7	
Delay (s)		3.0			3.4			14.7	14.3		15.3	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.0			3.4			14.4			15.3	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	37.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	2	262	19	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	203	17	2	298	22	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			220		506	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					302	
vCu, unblocked vol			220		506	203
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		97	100
cM capacity (veh/h)			1355		655	808

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	2	298	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1355	1700	672
Volume to Capacity	0.12	0.01	0.00	0.18	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.6
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.6
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	1207	11	0	0	0	0	55	24	16	81	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3343						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3343						3240			3066	
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)	128	1298	12	0	0	0	0	59	26	17	87	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1438	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2622						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.43									c0.03	
v/c Ratio		0.55						0.19			0.33	
Uniform Delay, d1		2.9						28.8			29.3	
Progression Factor		1.00						1.00			0.60	
Incremental Delay, d2		0.8						0.3			0.6	
Delay (s)		3.7						29.1			18.1	
Level of Service		A						C			B	
Approach Delay (s)		3.7			0.0			29.1			18.1	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1180	64	0	0	0	0	80	121	77	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3335						1711			1621	
Flt Permitted		1.00						1.00			0.73	
Satd. Flow (perm)		3335						1711			1204	
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)	18	1388	75	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	1477	0	0	0	0	0	211	0	0	187	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		30.4						14.8			14.8	
Effective Green, g (s)		30.4						14.8			14.8	
Actuated g/C Ratio		0.57						0.28			0.28	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1906						476			335	
v/s Ratio Prot								0.12				
v/s Ratio Perm		0.44									c0.16	
v/c Ratio		0.77						0.44			0.56	
Uniform Delay, d1		8.8						15.8			16.4	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.0						0.7			2.0	
Delay (s)		10.7						16.5			18.4	
Level of Service		B						B			B	
Approach Delay (s)		10.7			0.0			16.5			18.4	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	53.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1167	18	0	0	0	0	25	24	25	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3351						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3351						1597			1355	
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)	23	1203	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1244	0	0	0	0	0	29	0	0	55	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		30.8						4.5			4.5	
Effective Green, g (s)		31.3						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2368						180			153	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.37									c0.04	
v/c Ratio		0.53						0.16			0.36	
Uniform Delay, d1		3.0						17.8			18.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.4			1.4	
Delay (s)		3.2						18.2			19.6	
Level of Service		A						B			B	
Approach Delay (s)		3.2			0.0			18.2			19.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	44.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
418: Simpson Avenue/N Park Street #1012 & Ontario Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	1191	19	0	0	0	0	31	36	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	48	1228	20	0	0	0	0	32	37	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1247			1358	1335	624	764	1344	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1247			1358	1335	624	764	1344	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	78	91	79	69	100
cM capacity (veh/h)	1607			554			79	147	426	220	148	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	662	634	69	92
Volume Left	48	0	0	45
Volume Right	0	20	37	0
cSH	1607	1700	226	177
Volume to Capacity	0.03	0.37	0.31	0.52
Queue Length 95th (ft)	2	0	31	65
Control Delay (s)	0.9	0.0	27.7	45.4
Lane LOS	A		D	E
Approach Delay (s)	0.4		27.7	45.4
Approach LOS			D	E

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	859	12	0	0	0	0	415	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3323						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	934	13	0	0	0	0	451	9	0	0	0
RTOR Reduction (vph)	54	2	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	54	945	0	0	0	0	0	458	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	19.0	19.0						11.1				
Effective Green, g (s)	20.0	20.0						12.1				
Actuated g/C Ratio	0.50	0.50						0.30				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	874	1657						1054				
v/s Ratio Prot		c0.28						c0.13				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.57						0.43				
Uniform Delay, d1	5.2	7.0						11.3				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.5						0.3				
Delay (s)	5.2	7.5						11.5				
Level of Service	A	A						B				
Approach Delay (s)		7.3			0.0			11.5			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1076	70	0	0	0	0	27	171	41	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1575	1504		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.75	
Satd. Flow (perm)		2893	1300					1575	1504		1393	
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)	18	1157	75	0	0	0	0	29	184	44	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	47	47	0	0	0
Lane Group Flow (vph)	0	1175	66	0	0	0	0	61	58	0	78	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.2	53.2					7.8	7.8		7.8	
Effective Green, g (s)		53.7	53.7					8.3	8.3		8.3	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2219	997					187	178		165	
v/s Ratio Prot		c0.41						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.53	0.07					0.33	0.33		0.47	
Uniform Delay, d1		3.2	2.0					28.3	28.3		28.8	
Progression Factor		0.31	0.29					1.00	1.00		1.00	
Incremental Delay, d2		0.8	0.1					1.0	1.1		2.1	
Delay (s)		1.8	0.7					29.3	29.4		30.9	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.7			0.0			29.3			30.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1047	24	0	0	0	0	12	86	7	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2882						1314			1462	
Flt Permitted		1.00						1.00			0.87	
Satd. Flow (perm)		2882						1314			1291	
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)	24	1102	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	56	0	0	0	0
Lane Group Flow (vph)	0	1150	0	0	0	0	0	48	0	0	18	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.8						7.2			7.2	
Effective Green, g (s)		54.8						7.2			7.2	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2256						135			133	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.40									0.01	
v/c Ratio		0.51						0.36			0.14	
Uniform Delay, d1		2.7						29.2			28.6	
Progression Factor		0.39						1.00			1.00	
Incremental Delay, d2		0.6						1.6			0.5	
Delay (s)		1.7						30.9			29.0	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			30.9			29.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	906	16	0	0	0	0	0	29	289	216	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2887							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2887							1289	1681	1405	
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)	0	954	17	0	0	0	0	0	31	304	227	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	178	9	0
Lane Group Flow (vph)	0	969	0	0	0	0	0	0	4	83	261	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		28.6							9.5	18.4	18.4	
Effective Green, g (s)		29.1							10.0	18.9	18.9	
Actuated g/C Ratio		0.42							0.14	0.27	0.27	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1200							184	454	379	
v/s Ratio Prot		c0.34							c0.00	0.05	c0.19	
v/s Ratio Perm												
v/c Ratio		0.81							0.02	0.18	0.69	
Uniform Delay, d1		18.0							25.8	19.6	22.9	
Progression Factor		1.09							1.00	1.00	1.00	
Incremental Delay, d2		5.5							0.2	0.9	9.8	
Delay (s)		25.1							26.0	20.5	32.7	
Level of Service		C							C	C	C	
Approach Delay (s)		25.1			0.0			26.0			26.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	25.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	383	12	0	0	0	0	45	25	460	47	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2879						1418		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2879						1418		1681	1360	
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)	7	407	13	0	0	0	0	48	27	489	50	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	424	0	0	0	0	0	51	0	269	270	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		17.6						6.9		32.0	32.0	
Effective Green, g (s)		18.1						7.4		32.5	32.5	
Actuated g/C Ratio		0.26						0.11		0.46	0.46	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		744						150		780	631	
v/s Ratio Prot								c0.04		0.16	c0.20	
v/s Ratio Perm		0.15										
v/c Ratio		0.57						0.34		0.34	0.43	
Uniform Delay, d1		22.6						29.0		12.0	12.5	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.0						1.3		1.2	2.1	
Delay (s)		23.6						30.4		13.2	14.7	
Level of Service		C						C		B	B	
Approach Delay (s)		23.6			0.0			30.4			13.9	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	309	0	517	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1791		2111		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1791		2111		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	343	0	574	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	343	0	574	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		29.3		29.3		
Effective Green, g (s)		29.3		29.3		
Actuated g/C Ratio		0.74		0.74		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1332		1570		
v/s Ratio Prot		0.19		c0.27		
v/s Ratio Perm						
v/c Ratio		0.26		0.37		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.1		
Delay (s)		1.7		1.9		
Level of Service		A		A		
Approach Delay (s)	1.7			1.9	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	39.4	Sum of lost time (s)	10.1
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	894	22	18	163	0	0	90	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3490			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3490			3041			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	931	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	78	0
Lane Group Flow (vph)	0	0	0	0	967	0	0	189	0	0	269	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					49.1			11.9			11.9	
Effective Green, g (s)					49.6			12.4			12.4	
Actuated g/C Ratio					0.71			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2473			539			531	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.28			0.06				
v/c Ratio					0.39			0.35			0.51	
Uniform Delay, d1					4.1			25.3			26.0	
Progression Factor					1.47			1.04			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					6.5			26.6			26.8	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.5			26.6			26.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1196	19	13	381	0	0	51	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
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3353			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3353			1679			1710	1615
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)	0	0	0	15	1272	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	50
Lane Group Flow (vph)	0	0	0	0	1305	0	0	419	0	0	54	240
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2060			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.39			c0.25				0.15
v/c Ratio					0.63			0.92			0.12	0.55
Uniform Delay, d1					8.5			24.8			19.2	21.8
Progression Factor					0.61			1.00			1.00	1.00
Incremental Delay, d2					1.4			26.1			0.5	4.9
Delay (s)					6.6			50.8			19.7	26.7
Level of Service					A			D			B	C
Approach Delay (s)		0.0			6.6			50.8			25.6	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	70.0	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)	0	0	0	44	1120	92	32	68	0	0	211	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3567	1554		1815			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3567	1554		1551			1794	
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)	0	0	0	46	1179	97	34	72	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1225	54	0	106	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					29.0	29.0		14.7			14.7	
Effective Green, g (s)					29.0	29.0		14.7			14.7	
Actuated g/C Ratio					0.56	0.56		0.28			0.28	
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)					2001	872		441			510	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.34	0.04		0.07				
v/c Ratio					0.61	0.06		0.24			0.59	
Uniform Delay, d1					7.6	5.2		14.2			15.9	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.3			1.7	
Delay (s)					8.2	5.2		14.5			17.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			7.9			14.5			17.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	51.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1280	5	18	7	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.96			1.00	
Satd. Flow (prot)					3324			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3324			1676			1777	
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)	0	0	0	35	1362	5	19	7	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1402	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.9			1.3			1.3	
Effective Green, g (s)					30.4			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2514			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.42			c0.02				
v/c Ratio					0.56			0.35			0.29	
Uniform Delay, d1					2.1			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			2.8			2.0	
Delay (s)					2.3			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.3			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	42	1171	12	52	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	46	1287	13	57	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1300			0			758	1392	0	1393	1386	650
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1300			0			758	1392	0	1393	1386	650
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			77	90	100	100	86	97
cM capacity (veh/h)	529			1622			251	137	1084	93	140	417

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	690	657	71	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	215	188
Volume to Capacity	0.03	0.39	0.33	0.17
Queue Length 95th (ft)	2	0	35	15
Control Delay (s)	0.8	0.0	29.8	28.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		29.8	28.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1159	2	471	23	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3361		1618	1630				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1618	1630				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1302	2	529	26	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	158	158	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1304	0	117	122	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					26.4		10.0	10.0				0.6
Effective Green, g (s)					27.4		11.0	11.0				1.6
Actuated g/C Ratio					0.53		0.21	0.21				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1771		342	345				50
v/s Ratio Prot					c0.39							
v/s Ratio Perm							0.07	0.08				c0.00
v/c Ratio					0.74		0.34	0.35				0.00
Uniform Delay, d1					9.5		17.4	17.5				24.4
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.6		0.6	0.6				0.0
Delay (s)					11.1		18.0	18.1				24.5
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.1			18.1			24.5	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1222	184	0	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1286	194	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1286				1286	643
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1286				1286	643
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	78
cM capacity (veh/h)	535				153	411

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	643	643	194	89
Volume Left	0	0	0	0
Volume Right	0	0	194	89
cSH	1700	1700	1700	411
Volume to Capacity	0.38	0.38	0.11	0.22
Queue Length 95th (ft)	0	0	0	20
Control Delay (s)	0.0	0.0	0.0	16.2
Lane LOS				C
Approach Delay (s)	0.0			16.2
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	474	1066	0	0	8	98	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	489	1099	0	0	8	101	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			489	489	489	1588	1588	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			489	489	489	1588	1588	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	6	100	
cM capacity (veh/h)			480	579	490	108	413	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	855	733	8	101
Volume Left	0	0	8	0
Volume Right	366	733	0	0
cSH	1700	1700	490	108
Volume to Capacity	0.50	0.43	0.02	0.94
Queue Length 95th (ft)	0	0	1	144
Control Delay (s)	0.0	0.0	12.5	143.6
Lane LOS			B	F
Approach Delay (s)	0.0		133.7	
Approach LOS			F	

Intersection Summary			
Average Delay	8.6		
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	52	0	0	1186	0	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	0	0	1289	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	0	0	1289	0	508
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.3			46.7		69.0
Effective Green, g (s)	13.8			47.2		69.0
Actuated g/C Ratio	0.20			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	354			2398		2787
v/s Ratio Prot	0.03			c0.37		
v/s Ratio Perm						c0.18
v/c Ratio	0.16			0.54		0.18
Uniform Delay, d1	22.8			5.4		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.8		0.1
Delay (s)	22.9			6.3		0.1
Level of Service	C			A		A
Approach Delay (s)	22.9			6.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	609	577	467	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1694	1845	3467	
Flt Permitted			0.39	1.00	1.00	
Satd. Flow (perm)			695	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	634	601	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	634	601	518	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			49.8	54.3	25.2	
Effective Green, g (s)			50.8	54.8	25.7	
Actuated g/C Ratio			0.74	0.79	0.37	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			875	1465	1291	
v/s Ratio Prot			c0.26	0.33	0.15	
v/s Ratio Perm			c0.27			
v/c Ratio			0.72	0.41	0.40	
Uniform Delay, d1			4.3	2.2	16.0	
Progression Factor			0.45	0.08	1.00	
Incremental Delay, d2			2.2	0.7	0.1	
Delay (s)			4.2	0.9	16.1	
Level of Service			A	A	B	
Approach Delay (s)	0.0			2.6	16.1	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	947	218	0	0	0	21	0	646	143	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.97				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2449				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2449				
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)	1018	234	0	0	0	23	0	695	154	0	0	0
RTOR Reduction (vph)	355	91	0	0	0	22	0	19	0	0	0	0
Lane Group Flow (vph)	266	540	0	0	0	1	0	830	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	23%	17%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	24.2	24.2				2.5		31.3				
Effective Green, g (s)	24.7	24.7				1.5		31.8				
Actuated g/C Ratio	0.35	0.35				0.02		0.45				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	571	587				27		1113				
v/s Ratio Prot								c0.34				
v/s Ratio Perm	0.16	0.33				c0.00						
v/c Ratio	0.47	0.92				0.05		0.75				
Uniform Delay, d1	17.5	21.7				33.6		15.8				
Progression Factor	1.22	0.33				1.00		1.00				
Incremental Delay, d2	1.5	13.8				0.3		2.8				
Delay (s)	22.9	21.0				33.9		18.5				
Level of Service	C	C				C		B				
Approach Delay (s)		22.0			33.9			18.5			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	21	0	0	158	18	95	1527	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1631			4632				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1269			1631			4632				
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)	17	22	0	0	166	19	100	1607	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	179	0	0	1713	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	16%	5%	38%	10%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		13.1			13.1			47.9				
Effective Green, g (s)		13.6			13.6			48.4				
Actuated g/C Ratio		0.19			0.19			0.69				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		247			317			3203				
v/s Ratio Prot					c0.11							
v/s Ratio Perm		0.03						0.37				
v/c Ratio		0.16			0.57			0.53				
Uniform Delay, d1		23.4			25.5			5.3				
Progression Factor		1.06			1.00			0.99				
Incremental Delay, d2		0.3			2.3			0.4				
Delay (s)		25.0			27.8			5.7				
Level of Service		C			C			A				
Approach Delay (s)		25.0			27.8			5.7			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	64	1579	96	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1712	1504		4412				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4412				
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)	95	152	0	0	86	120	67	1662	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	18	0	8	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	78	0	1822	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	9%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.3			17.3	17.3		44.2				
Effective Green, g (s)		17.8			17.8	17.8		44.2				
Actuated g/C Ratio		0.25			0.25	0.25		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		316			435	382		2786				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.41				
v/c Ratio		0.78			0.22	0.20		0.65				
Uniform Delay, d1		24.3			20.6	20.5		8.1				
Progression Factor		0.94			1.00	1.00		2.07				
Incremental Delay, d2		11.1			0.3	0.3		1.1				
Delay (s)		34.0			20.9	20.8		17.9				
Level of Service		C			C	C		B				
Approach Delay (s)		34.0			20.8			17.9			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	19.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	76	31	0	0	71	32	28	1575	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1785			4230				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4230				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	87	36	0	0	82	37	32	1810	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	14	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	105	0	0	1891	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	10%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.5			11.5			50.0				
Effective Green, g (s)		12.0			12.0			50.0				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		227			306			3021				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.09						0.45				
v/c Ratio		0.54			0.34			0.63				
Uniform Delay, d1		26.5			25.5			5.2				
Progression Factor		1.60			1.00			0.24				
Incremental Delay, d2		2.6			0.7			0.8				
Delay (s)		45.1			26.2			2.0				
Level of Service		D			C			A				
Approach Delay (s)		45.1			26.2			2.0			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	233	25	0	0	32	18	54	1749	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4275				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4275				
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)	248	27	0	0	34	19	57	1861	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	8	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	275	0	0	45	0	0	1938	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	9%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.4			20.4			39.6				
Effective Green, g (s)		20.9			20.9			41.1				
Actuated g/C Ratio		0.30			0.30			0.59				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		315			423			2510				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.45				
v/c Ratio		0.87			0.11			0.77				
Uniform Delay, d1		23.3			17.8			10.9				
Progression Factor		0.67			1.00			0.62				
Incremental Delay, d2		22.1			0.1			1.9				
Delay (s)		37.7			17.9			8.7				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.9			8.7			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1721	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1374			4277				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1374			4277				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	60	17	0	0	8	11	25	1956	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	9	0	0	1998	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	9%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		151			183			3220				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.47				
v/c Ratio		0.51			0.05			0.62				
Uniform Delay, d1		28.2			26.5			4.0				
Progression Factor		0.82			1.00			0.23				
Incremental Delay, d2		2.6			0.1			0.6				
Delay (s)		25.9			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		25.9			26.6			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
310: S "I" Street & W Wishkah Street #1011

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	56	37	34	35	0	0	0	0	17	1428	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4270	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1185						4270	
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)	0	62	41	38	39	0	0	0	0	19	1587	40
RTOR Reduction (vph)	0	25	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	78	0	0	77	0	0	0	0	0	1644	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	9%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.5			8.5						53.0	
Effective Green, g (s)		9.0			9.0						53.0	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		181			152						3233	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.06						0.38	
v/c Ratio		0.43			0.51						0.51	
Uniform Delay, d1		28.1			28.4						3.4	
Progression Factor		1.00			0.97						0.66	
Incremental Delay, d2		1.6			2.6						0.5	
Delay (s)		29.8			30.2						2.7	
Level of Service		C			C						A	
Approach Delay (s)		29.8			30.2			0.0			2.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	145	35	24	68	0	0	0	0	8	1287	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1451			1471						4219	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1451			1325						4219	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	158	38	26	74	0	0	0	0	9	1399	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	100	0	0	0	0	0	1485	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	10%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		13.9			13.9						46.1	
Effective Green, g (s)		14.4			14.4						47.6	
Actuated g/C Ratio		0.21			0.21						0.68	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		298			273						2869	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.08						0.35	
v/c Ratio		0.61			0.37						0.52	
Uniform Delay, d1		25.2			23.9						5.5	
Progression Factor		1.00			0.97						0.24	
Incremental Delay, d2		3.5			0.7						0.6	
Delay (s)		28.7			23.9						1.9	
Level of Service		C			C						A	
Approach Delay (s)		28.7			23.9			0.0			1.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
312: S "K" Street & W Wishkah Street #1011

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1302	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1448			1471						4235	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1448			1339						4235	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	82	22	17	49	0	0	0	0	21	1415	27
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	87	0	0	66	0	0	0	0	0	1461	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	10%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.4			8.4						53.1	
Effective Green, g (s)		8.9			8.9						53.1	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		184			170						3213	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.35	
v/c Ratio		0.47			0.39						0.45	
Uniform Delay, d1		28.4			28.1						3.1	
Progression Factor		1.00			0.51						0.22	
Incremental Delay, d2		1.9			1.4						0.4	
Delay (s)		30.3			15.7						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.3			15.7			0.0			1.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	104	15	57	84	0	0	0	0	131	1165	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1831			1826						4388	
Flt Permitted		1.00			0.85						1.00	
Satd. Flow (perm)		1831			1577						4388	
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)	0	109	16	60	88	0	0	0	0	138	1226	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	148	0	0	0	0	0	1393	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	10%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		536			462						2601	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.32	
v/c Ratio		0.22			0.32						0.54	
Uniform Delay, d1		18.7			19.3						8.5	
Progression Factor		1.00			0.98						0.83	
Incremental Delay, d2		0.9			1.7						0.7	
Delay (s)		19.6			20.7						7.8	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.7			0.0			7.8	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	28	213	0	0	0	0	21	463	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.93	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1234						2350	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1234						2350	1400
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)	0	0	0	30	227	0	0	0	0	22	493	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	144	170
Lane Group Flow (vph)	0	0	0	0	257	0	0	0	0	0	770	245
Heavy Vehicles (%)	2%	2%	2%	64%	17%	2%	2%	2%	2%	0%	27%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					20.1						40.9	40.9
Effective Green, g (s)					20.6						41.4	41.4
Actuated g/C Ratio					0.29						0.59	0.59
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					363						1390	828
v/s Ratio Prot												
v/s Ratio Perm					0.21						0.33	0.18
v/c Ratio					0.71						0.55	0.30
Uniform Delay, d1					22.0						8.7	7.1
Progression Factor					0.90						0.65	0.11
Incremental Delay, d2					5.9						1.4	0.8
Delay (s)					25.8						7.0	1.6
Level of Service					C						A	A
Approach Delay (s)		0.0			25.8			0.0			5.3	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1109	72	0	0	0	0	0	0	19	452	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		0.99									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3000									2343	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3000									2343	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1275	83	0	0	0	0	0	0	22	520	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	1353	0	0	0	0	0	0	0	0	537	0
Heavy Vehicles (%)	0%	4%	58%	2%	2%	2%	2%	2%	2%	0%	32%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		37.6									23.4	
Effective Green, g (s)		38.1									23.9	
Actuated g/C Ratio		0.54									0.34	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1633									800	
v/s Ratio Prot		c0.45										
v/s Ratio Perm											0.23	
v/c Ratio		0.83									0.67	
Uniform Delay, d1		13.2									19.7	
Progression Factor		0.80									1.46	
Incremental Delay, d2		4.3									1.9	
Delay (s)		14.8									30.6	
Level of Service		B									C	
Approach Delay (s)		14.8			0.0			0.0			30.6	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1461	511	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1114			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1114			
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)	124	692	0	0	0	0	0	1538	538	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	804	0	0	0	0	0	1538	501	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	16%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		18.8						42.7	42.7			
Effective Green, g (s)		18.8						43.2	43.2			
Actuated g/C Ratio		0.27						0.62	0.62			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1229						1892	687			
v/s Ratio Prot								c0.50				
v/s Ratio Perm		0.18							0.45			
v/c Ratio		0.65						0.81	0.73			
Uniform Delay, d1		22.7						10.3	9.3			
Progression Factor		0.88						1.81	1.98			
Incremental Delay, d2		1.2						3.3	5.6			
Delay (s)		21.1						21.9	24.0			
Level of Service		C						C	C			
Approach Delay (s)		21.1			0.0			22.5			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	667	411	76	1407	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3113			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3113			2943				
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)	0	0	0	0	688	424	78	1451	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1094	0	0	1523	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	12%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					24.0			37.0				
Effective Green, g (s)					24.5			37.5				
Actuated g/C Ratio					0.35			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1090			1577				
v/s Ratio Prot					c0.35							
v/s Ratio Perm								0.52				
v/c Ratio					1.00			0.97				
Uniform Delay, d1					22.8			15.6				
Progression Factor					1.00			0.75				
Incremental Delay, d2					28.1			11.1				
Delay (s)					50.9			22.8				
Level of Service					D			C				
Approach Delay (s)		0.0			50.9			22.8			0.0	
Approach LOS		A			D			C			A	

Intersection Summary			
HCM Average Control Delay	34.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1232	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2948									4240	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4240	
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)	0	290	45	0	0	0	0	0	0	394	1325	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	51	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1668	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	10%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.7									48.3	
Effective Green, g (s)		13.2									48.8	
Actuated g/C Ratio		0.19									0.70	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		556									2956	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.39	
v/c Ratio		0.56									0.56	
Uniform Delay, d1		25.8									5.3	
Progression Factor		1.00									0.71	
Incremental Delay, d2		1.3									0.7	
Delay (s)		27.1									4.4	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			4.4	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	438	296	0	0	0	0	0	1272	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.98						1.00	
Satd. Flow (prot)				1114	3094						4415	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1114	3094						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	476	322	0	0	0	0	0	1383	68
RTOR Reduction (vph)	0	0	0	23	23	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	239	513	0	0	0	0	0	1445	0
Heavy Vehicles (%)	2%	2%	2%	18%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				19.7	19.7						41.3	
Effective Green, g (s)				20.2	20.2						41.8	
Actuated g/C Ratio				0.29	0.29						0.60	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				321	893						2636	
v/s Ratio Prot				c0.21	0.17						c0.33	
v/s Ratio Perm												
v/c Ratio				0.74	0.57						0.55	
Uniform Delay, d1				22.5	21.2						8.4	
Progression Factor				1.01	1.10						1.00	
Incremental Delay, d2				2.9	0.3						0.8	
Delay (s)				25.7	23.7						9.3	
Level of Service				C	C						A	
Approach Delay (s)		0.0			24.4			0.0			9.3	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1238	36	28	1027	2	349	8	18	17	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.98	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3311		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3125		1727	3311		1681	1672			1762	
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)	13	1456	42	33	1208	2	411	9	21	20	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1510	0	33	1210	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	9%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.3		5.4	80.7		17.3	17.3			5.0	
Effective Green, g (s)		72.3		5.4	81.7		18.3	18.3			6.0	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1915		79	2292		261	259			90	
v/s Ratio Prot				0.02	c0.37		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.53		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.8		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.56		1.00	1.00			1.00	
Incremental Delay, d2		3.4		2.8	0.7		22.4	19.9			1.7	
Delay (s)		20.5		59.5	5.6		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.5			7.0			69.6			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1575	102	53	1079	0	215	8	109	51	19	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3312		1727	3312		1665	1552			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3312		1727	3312		1665	1552			1751	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	1641	106	55	1124	0	224	8	114	53	20	25
RTOR Reduction (vph)	0	3	0	0	0	0	0	66	0	0	13	0
Lane Group Flow (vph)	26	1744	0	55	1124	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	9%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.3		7.6	66.3		14.5	14.5			11.6	
Effective Green, g (s)	6.6	66.3		7.6	67.3		15.5	15.5			12.6	
Actuated g/C Ratio	0.06	0.56		0.06	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1861		111	1889		219	204			187	
v/s Ratio Prot	0.02	c0.53		0.03	c0.34		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.27	0.94		0.50	0.60		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.9		53.3	16.5		49.9	47.6			49.5	
Progression Factor	0.78	0.60		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	8.6		2.5	1.4		21.0	2.2			2.1	
Delay (s)	42.3	22.9		55.9	17.9		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		23.2			19.6			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	913	3	516	853	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.93	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3260		3038	1517		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3260		3038	1517		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1127	4	637	1053	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1131	0	1153	537	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	13%	7%	7%	14%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	36.2		38.0	86.2		38.0
Effective Green, g (s)	38.2		40.0	86.2		40.0
Actuated g/C Ratio	0.44		0.46	1.00		0.46
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1445		1410	1517		1232
v/s Ratio Prot	c0.35		c0.38	0.35		0.14
v/s Ratio Perm						
v/c Ratio	0.78		0.82	0.35		0.31
Uniform Delay, d1	20.5		20.0	0.0		14.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	2.7		3.7	0.6		0.1
Delay (s)	23.2		23.7	0.6		14.5
Level of Service	C		C	A		B
Approach Delay (s)	23.2		16.4		14.5	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	86.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	20	0	0	8	19	635	1	3	340	55
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	21	0	0	8	20	668	1	3	358	58
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1117	1110	394	1096	1138	671	422			670		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1117	1110	394	1096	1138	671	422			670		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	178	205	655	182	197	459	1136			919		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	676	3	416
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	655	459	1136	1136	919	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.24
Queue Length 95th (ft)	2	1	1	1	0	0
Control Delay (s)	10.7	13.0	8.2	0.3	8.9	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.0	0.5		0.1	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	38.6%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
332: S M Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	24	1	10	0	2	4	14	590	2	2	292	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	26	1	11	0	2	4	15	634	2	2	314	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1004	1001	330	995	1015	635	345			637		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1004	1001	330	995	1015	635	345			637		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	98	100	99	99	99			100		
cM capacity (veh/h)	216	240	714	218	236	480	1219			947		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	637	2	345
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	270	357	1219	1700	947	1700
Volume to Capacity	0.14	0.02	0.01	0.37	0.00	0.20
Queue Length 95th (ft)	12	1	1	0	0	0
Control Delay (s)	20.5	15.3	8.0	0.0	8.8	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	20.5	15.3	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	2	393	2	2	222	164
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	2	452	2	2	255	189
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	818	813	349	721	906	453	444			454		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	818	813	349	721	906	453	444			454		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	92	100	100	100	98	99	100			100		
cM capacity (veh/h)	289	314	698	329	266	589	1127			1117		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	454	2	444
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	189
cSH	314	351	1127	1700	1117	1700
Volume to Capacity	0.08	0.03	0.00	0.27	0.00	0.26
Queue Length 95th (ft)	7	2	0	0	0	0
Control Delay (s)	17.5	15.6	8.2	0.0	8.2	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	17.5	15.6	0.0		0.0	
Approach LOS	C	C				

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	36.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	370	30	0	0	0	1	82	1	2	227	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	389	32	0	0	0	1	86	1	2	239	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			421			539	405	405	449	421	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			421			539	405	405	449	421	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	84	100	100	54	99
cM capacity (veh/h)	1604			1149			288	536	648	455	524	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	421	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	532	539
Volume to Capacity	0.00	0.00	0.17	0.47
Queue Length 95th (ft)	0	0	15	63
Control Delay (s)	0.0	0.0	13.1	17.6
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.1	17.6
Approach LOS			B	C

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	573	8	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	599	1	3	616	9	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1222	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1222	599
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		95	99
cM capacity (veh/h)			948		159	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	619	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	181
Volume to Capacity	0.35	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	26.1
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	26.1
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	550	0	2	598	10	0	1	0	8	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	598	0	2	650	11	0	1	0	9	2	8
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			601			1288	1284	603	1279	1279	657
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			601			1288	1284	603	1279	1279	657
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	94	99	98
cM capacity (veh/h)	912			959			136	164	500	138	161	457

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	663	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	912	959	164	198
Volume to Capacity	0.01	0.00	0.01	0.09
Queue Length 95th (ft)	1	0	1	8
Control Delay (s)	0.3	0.1	27.1	25.1
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	27.1	25.1
Approach LOS			D	D

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	553	1	1	593	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	601	1	1	645	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	646			602			1252	1252	602	1252	1252	645
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	646			602			1252	1252	602	1252	1252	645
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	99	100	100
cM capacity (veh/h)	925			961			148	172	500	148	172	472

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	603	647	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	925	961	229	226
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	20.9	21.1
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	20.9	21.1
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	468	34	186	468	11	76	2	164	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	514	37	204	514	12	84	2	180	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			552			1599	1571	535	1749	1584	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			552			1599	1571	535	1749	1584	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			70			0	97	67	43	98	94
cM capacity (veh/h)	1021			691			60	75	548	33	72	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	602	731	266	54
Volume Left	51	204	84	19
Volume Right	37	12	180	34
cSH	1021	691	151	83
Volume to Capacity	0.05	0.30	1.76	0.65
Queue Length 95th (ft)	4	31	487	76
Control Delay (s)	1.3	7.3	419.0	107.0
Lane LOS	A	A	F	F
Approach Delay (s)	1.3	7.3	419.0	107.0
Approach LOS			F	F

Intersection Summary			
Average Delay	74.6		
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
354: W Wishkah Street & S Garfield St

8/17/2009

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	649	0	0	27	664
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	705	0	0	29	722
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			780	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			780	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			357	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	705	29	722
Volume Left	0	29	0
Volume Right	705	0	0
cSH	1700	1578	1700
Volume to Capacity	0.41	0.02	0.42
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	662	5	0	192	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	727	5	0	211	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1458	1458	1460	0
vC1, stage 1 conf vol			1458	1458	0	
vC2, stage 2 conf vol			0	0	1460	
vCu, unblocked vol	0		1458	1458	1460	0
tC, single (s)	4.2		7.1	7.3	6.5	6.2
tC, 2 stage (s)			6.1	6.3	5.5	
tF (s)	2.3		3.5	4.8	4.0	3.3
p0 queue free %	54		100	0	100	100
cM capacity (veh/h)	1597		80	47	95	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	485	248	211
Volume Left	485	242	0
Volume Right	0	5	0
cSH	1597	1597	47
Volume to Capacity	0.46	0.46	4.46
Queue Length 95th (ft)	61	61	Err
Control Delay (s)	9.1	9.0	Err
Lane LOS	A	A	F
Approach Delay (s)	9.1		Err
Approach LOS			F

Intersection Summary			
Average Delay	2242.0		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
356: N Monroe Street & W Heron Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	21	3	0	0	169	7	12	830	20	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	3	0	0	192	8	14	943	23	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	603	993	0	984	982	483	0			966		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	603	993	0	984	982	483	0			966		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	99	100	100	22	99	99			100		
cM capacity (veh/h)	136	245	1091	201	247	532	1600			709		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	485	494
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	144	253	1600	1700
Volume to Capacity	0.19	0.79	0.01	0.29
Queue Length 95th (ft)	17	149	1	0
Control Delay (s)	35.6	57.6	0.3	0.0
Lane LOS	E	F	A	
Approach Delay (s)	35.6	57.6	0.1	
Approach LOS	E	F		

Intersection Summary				
Average Delay		10.5		
Intersection Capacity Utilization		46.6%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
357: N Lincoln Street & W Heron Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	6	0	0	16	2	5	844	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	6	0	0	17	2	5	879	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	460	895	2	897	892	442	0			884		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460	895	2	897	892	442	0			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	94	100	100			100		
cM capacity (veh/h)	464	281	1086	233	282	569	1593			761		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	445	445
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	357	299	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.26
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	15.5	17.8	0.1	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.5	17.8	0.1	
Approach LOS	C	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	31	797	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	105	9	36	927	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	600	1013	4	1011	1009	471	3			938		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600	1013	4	1011	1009	471	3			938		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	94	97	100	100	49	98	98			100		
cM capacity (veh/h)	200	204	1019	162	205	492	1592			724		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	499	470
Volume Left	12	0	36	0
Volume Right	0	9	0	7
cSH	202	215	1592	1700
Volume to Capacity	0.09	0.53	0.02	0.28
Queue Length 95th (ft)	8	69	2	0
Control Delay (s)	24.7	39.2	0.7	0.0
Lane LOS	C	E	A	
Approach Delay (s)	24.7	39.2	0.4	
Approach LOS	C	E		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	34	0	0	0	0	3	509	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	4	100	40	0	0	0	0	4	606	10
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	641	628	311	328	633	7	618			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	363	348	0	13	353	7	338			7		
tC, single (s)	7.8	6.8	7.2	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.4	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	92	100	100			100		
cM capacity (veh/h)	446	483	931	852	501	1055	1087			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	140	307	312
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	535	709	1541	1700
Volume to Capacity	0.03	0.20	0.00	0.18
Queue Length 95th (ft)	3	18	0	0
Control Delay (s)	12.0	11.3	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	11.3	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.4		
Intersection Capacity Utilization		36.2%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
360: N Lincoln Street & W Wishkah Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	570	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	613	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	650	642	315	340	648	4	626			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	642	315	340	648	4	626			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	347	392	687	575	389	1080	952			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	317	319
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	418	481	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.9	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.9	13.0	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		35.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	525	65	0	30	1	121	41	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	559	69	0	32	1	129	44	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	628			0			643	621	316	326	655	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628			0			643	621	316	326	655	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	77	89	100
cM capacity (veh/h)	950			1565			329	403	686	565	383	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	293	348	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	408	504
Volume to Capacity	0.01	0.20	0.08	0.34
Queue Length 95th (ft)	1	0	7	38
Control Delay (s)	0.4	0.0	14.6	15.8
Lane LOS	A		B	C
Approach Delay (s)	0.2		14.6	15.8
Approach LOS			B	C

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	176	0	176	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	191	0	191	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	240			29			165	174	145	261	261	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240			29			165	174	145	261	261	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	67	100	99	100	100
cM capacity (veh/h)	1326			1584			804	574	908	504	634	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	240	191	5
Volume Left	0	0	0	5
Volume Right	17	191	0	0
cSH	1326	1584	574	504
Volume to Capacity	0.00	0.00	0.33	0.01
Queue Length 95th (ft)	0	0	36	1
Control Delay (s)	0.0	0.0	14.4	12.2
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	14.4	12.2
Approach LOS			B	B

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	233	1	1	10	220	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	253	1	1	11	239	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	253	240	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	253	240	240			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	66	100	100			
cM capacity (veh/h)	740	799	1338			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	254	12	240
Volume Left	253	1	0
Volume Right	1	0	1
cSH	740	1338	1700
Volume to Capacity	0.34	0.00	0.14
Queue Length 95th (ft)	38	0	0
Control Delay (s)	12.4	0.7	0.0
Lane LOS	B	A	
Approach Delay (s)	12.4	0.7	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
371: Port Industrial Road & W 1st Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	507	6	16	3	5	5	0	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	39	452	5	5	583	7	18	3	6	6	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	583			456			1172	1124	454	1133	1130	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			456			1172	1124	454	1133	1130	586
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			87	98	99	96	100	90
cM capacity (veh/h)	949			1115			141	189	588	163	187	494

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	590	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	949	1700	1115	1700	174	406
Volume to Capacity	0.04	0.27	0.00	0.35	0.16	0.13
Queue Length 95th (ft)	3	0	0	0	14	11
Control Delay (s)	9.0	0.0	8.2	0.0	29.5	15.2
Lane LOS	A		A		D	C
Approach Delay (s)	0.7		0.1		29.5	15.2
Approach LOS					D	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
372: Port Industrial Road & Myrtle Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	446	110	8	14	38	52	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	361	11	16	485	120	9	15	41	57	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	604			372			1013	1040	366	1029	986	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	604			372			1013	1040	366	1029	986	545
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			95	93	94	69	97	95
cM capacity (veh/h)	936			1144			186	212	653	184	240	541

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	621	65	92
Volume Left	18	16	9	57
Volume Right	11	120	41	29
cSH	936	1144	359	237
Volume to Capacity	0.02	0.01	0.18	0.39
Queue Length 95th (ft)	2	1	16	44
Control Delay (s)	0.6	0.4	17.2	29.5
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	17.2	29.5
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	288	2	4	0	339	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	324	2	4	0	381	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381			326			356	737	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			326			356	737	325	406	357	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	89	95	100	100	100
cM capacity (veh/h)	1151			596			591	340	716	481	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	381	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	381	33
cSH	1151	1700	596	1700	453
Volume to Capacity	0.01	0.19	0.01	0.22	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.2	0.0	11.1	0.0	14.4
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.1		14.4
Approach LOS					B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/17/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	39	0	2	0	0	0	31	50	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	0	2	0	0	0	36	59	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		112	94	0	170	93	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		112	94	0	170	93	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	95	100	95	100
cM capacity (veh/h)	1554			1620		809	767	1076	711	777	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	48	0	95	40
Volume Left	46	0	0	2
Volume Right	2	0	59	0
cSH	1554	1700	932	773
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	382	4	15	500	31	10	7	24	32	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1666			1767			1759	1538		1747	
Flt Permitted		0.98			0.99			0.81	1.00		0.80	
Satd. Flow (perm)		1643			1747			1461	1538		1446	
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)	12	411	4	16	538	33	11	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	22	0	12	0
Lane Group Flow (vph)	0	427	0	0	586	0	0	19	4	0	44	0
Heavy Vehicles (%)	7%	14%	7%	2%	7%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		26.2			26.2			5.7	5.7		5.7	
Effective Green, g (s)		26.7			26.7			6.2	6.2		6.2	
Actuated g/C Ratio		0.65			0.65			0.15	0.15		0.15	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1073			1140			221	233		219	
v/s Ratio Prot												
v/s Ratio Perm		0.26			c0.34			0.01	0.00		c0.03	
v/c Ratio		0.40			0.51			0.09	0.02		0.20	
Uniform Delay, d1		3.3			3.7			14.9	14.8		15.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.4			0.2	0.0		0.5	
Delay (s)		3.6			4.1			15.1	14.8		15.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.6			4.1			14.9			15.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	40.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	52	262	19	53
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	203	17	59	298	22	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			220		619	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					416	
vCu, unblocked vol			220		619	203
tC, single (s)			5.0		6.5	7.1
tC, 2 stage (s)					5.5	
tF (s)			3.0		3.6	4.1
p0 queue free %			94		96	91
cM capacity (veh/h)			955		560	656

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	59	298	82
Volume Left	0	0	59	0	22
Volume Right	0	17	0	0	60
cSH	1700	1700	955	1700	627
Volume to Capacity	0.12	0.01	0.06	0.18	0.13
Queue Length 95th (ft)	0	0	5	0	11
Control Delay (s)	0.0	0.0	9.0	0.0	11.6
Lane LOS			A		B
Approach Delay (s)	0.0		1.5		11.6
Approach LOS					B

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	1257	11	0	0	0	0	55	24	16	81	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3285						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3285						3240			3066	
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)	128	1352	12	0	0	0	0	59	26	17	87	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1492	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2576						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.45									c0.03	
v/c Ratio		0.58						0.19			0.33	
Uniform Delay, d1		3.0						28.8			29.3	
Progression Factor		1.00						1.00			0.58	
Incremental Delay, d2		1.0						0.3			0.6	
Delay (s)		3.9						29.1			17.5	
Level of Service		A						C			B	
Approach Delay (s)		3.9			0.0			29.1			17.5	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1230	64	0	0	0	0	80	121	77	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3275						1711			1621	
Flt Permitted		1.00						1.00			0.69	
Satd. Flow (perm)		3275						1711			1149	
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)	18	1447	75	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1536	0	0	0	0	0	214	0	0	187	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		33.8						15.1			15.1	
Effective Green, g (s)		33.8						15.1			15.1	
Actuated g/C Ratio		0.59						0.27			0.27	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1945						454			305	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.47									c0.16	
v/c Ratio		0.79						0.47			0.61	
Uniform Delay, d1		8.8						17.5			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.1						0.8			3.6	
Delay (s)		11.0						18.3			22.0	
Level of Service		B						B			C	
Approach Delay (s)		11.0			0.0			18.3			22.0	
Approach LOS		B			A			B			C	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1217	18	0	0	0	0	25	24	25	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3289						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3289						1597			1355	
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)	23	1255	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1296	0	0	0	0	0	29	0	0	55	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		32.0						4.5			4.5	
Effective Green, g (s)		32.5						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2349						175			149	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.39									c0.04	
v/c Ratio		0.55						0.16			0.37	
Uniform Delay, d1		3.1						18.4			18.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.3						0.4			1.5	
Delay (s)		3.3						18.8			20.3	
Level of Service		A						B			C	
Approach Delay (s)		3.3			0.0			18.8			20.3	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	45.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	1241	19	0	0	0	0	31	36	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	48	1279	20	0	0	0	0	32	37	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1299			1409	1386	649	790	1396	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1299			1409	1386	649	790	1396	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	77	91	78	66	100
cM capacity (veh/h)	1607			529			71	136	410	207	138	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	688	659	69	92
Volume Left	48	0	0	45
Volume Right	0	20	37	0
cSH	1607	1700	213	165
Volume to Capacity	0.03	0.39	0.32	0.55
Queue Length 95th (ft)	2	0	34	71
Control Delay (s)	0.8	0.0	29.9	50.9
Lane LOS	A		D	F
Approach Delay (s)	0.4		29.9	50.9
Approach LOS			D	F

Intersection Summary				
Average Delay		4.9		
Intersection Capacity Utilization		54.4%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	909	12	0	0	0	0	415	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3230						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3230						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	988	13	0	0	0	0	451	9	0	0	0
RTOR Reduction (vph)	52	1	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	56	1000	0	0	0	0	0	458	0	0	0	0
Heavy Vehicles (%)	3%	6%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	20.6	20.6						11.4				
Effective Green, g (s)	21.6	21.6						12.4				
Actuated g/C Ratio	0.51	0.51						0.30				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	901	1661						1032				
v/s Ratio Prot		c0.31						c0.13				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.60						0.44				
Uniform Delay, d1	5.1	7.2						12.0				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.6						0.3				
Delay (s)	5.1	7.8						12.3				
Level of Service	A	A						B				
Approach Delay (s)		7.5			0.0			12.3			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1126	70	0	0	0	0	27	171	41	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2840	1300					1575	1504		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.75	
Satd. Flow (perm)		2840	1300					1575	1504		1395	
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)	18	1211	75	0	0	0	0	29	184	44	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	40	40	0	0	0
Lane Group Flow (vph)	0	1229	66	0	0	0	0	68	65	0	78	0
Heavy Vehicles (%)	6%	8%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.1	53.1					7.9	7.9		7.9	
Effective Green, g (s)		53.6	53.6					8.4	8.4		8.4	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2175	995					189	180		167	
v/s Ratio Prot		c0.43						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.57	0.07					0.36	0.36		0.47	
Uniform Delay, d1		3.4	2.0					28.3	28.3		28.7	
Progression Factor		0.31	0.34					1.00	1.00		1.00	
Incremental Delay, d2		1.0	0.1					1.2	1.2		2.1	
Delay (s)		2.0	0.8					29.5	29.5		30.8	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.9			0.0			29.5			30.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1097	24	0	0	0	0	12	86	7	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2832						1314			1462	
Flt Permitted		1.00						1.00			0.87	
Satd. Flow (perm)		2832						1314			1297	
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)	24	1155	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	48	0	0	0	0
Lane Group Flow (vph)	0	1203	0	0	0	0	0	56	0	0	18	0
Heavy Vehicles (%)	6%	8%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.5						7.5			7.5	
Effective Green, g (s)		54.5						7.5			7.5	
Actuated g/C Ratio		0.78						0.11			0.11	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2205						141			139	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.42									0.01	
v/c Ratio		0.55						0.40			0.13	
Uniform Delay, d1		3.0						29.1			28.3	
Progression Factor		0.36						1.00			1.00	
Incremental Delay, d2		0.6						1.8			0.4	
Delay (s)		1.7						31.0			28.7	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			31.0			28.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	956	16	0	0	0	0	0	29	289	216	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2809							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2809							1289	1681	1405	
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)	0	1006	17	0	0	0	0	0	31	304	227	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	175	10	0
Lane Group Flow (vph)	0	1021	0	0	0	0	0	0	4	86	260	0
Heavy Vehicles (%)	2%	9%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		29.1							9.5	17.9	17.9	
Effective Green, g (s)		29.6							10.0	18.4	18.4	
Actuated g/C Ratio		0.42							0.14	0.26	0.26	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1188							184	442	369	
v/s Ratio Prot		c0.36							c0.00	0.05	c0.19	
v/s Ratio Perm												
v/c Ratio		0.86							0.02	0.20	0.71	
Uniform Delay, d1		18.3							25.8	20.0	23.3	
Progression Factor		1.10							1.00	1.00	1.00	
Incremental Delay, d2		7.5							0.2	1.0	10.8	
Delay (s)		27.6							26.0	21.0	34.2	
Level of Service		C							C	C	C	
Approach Delay (s)		27.6			0.0			26.0			27.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	433	12	0	0	0	0	45	25	460	47	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2733						1418		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2733						1418		1681	1360	
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)	7	461	13	0	0	0	0	48	27	489	50	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	479	0	0	0	0	0	51	0	269	270	0
Heavy Vehicles (%)	6%	12%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		19.9						6.9		29.7	29.7	
Effective Green, g (s)		20.4						7.4		30.2	30.2	
Actuated g/C Ratio		0.29						0.11		0.43	0.43	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		796						150		725	587	
v/s Ratio Prot								c0.04		0.16	c0.20	
v/s Ratio Perm		0.18										
v/c Ratio		0.60						0.34		0.37	0.46	
Uniform Delay, d1		21.3						29.0		13.5	14.1	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.3						1.3		1.5	2.6	
Delay (s)		22.6						30.4		14.9	16.7	
Level of Service		C						C		B	B	
Approach Delay (s)		22.6			0.0			30.4			15.8	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	359	0	567	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1678		2031		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1678		2031		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	399	0	630	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	399	0	630	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	11%	2%	6%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		30.5		30.5		
Effective Green, g (s)		30.5		30.5		
Actuated g/C Ratio		0.75		0.75		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1264		1530		
v/s Ratio Prot		0.24		c0.31		
v/s Ratio Perm						
v/c Ratio		0.32		0.41		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.2		
Delay (s)		1.8		2.0		
Level of Service		A		A		
Approach Delay (s)	1.8			2.0	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	40.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	944	22	18	163	0	0	90	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3395			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3395			3044			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	983	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	68	0
Lane Group Flow (vph)	0	0	0	0	1019	0	0	189	0	0	279	0
Heavy Vehicles (%)	2%	2%	2%	3%	6%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					48.8			12.2			12.2	
Effective Green, g (s)					49.3			12.7			12.7	
Actuated g/C Ratio					0.70			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2391			552			543	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.30			0.06				
v/c Ratio					0.43			0.34			0.51	
Uniform Delay, d1					4.4			25.0			25.9	
Progression Factor					1.39			1.03			1.00	
Incremental Delay, d2					0.5			0.3			0.8	
Delay (s)					6.6			26.2			26.7	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.6			26.2			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1246	19	13	381	0	0	51	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
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3290			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3290			1679			1710	1615
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)	0	0	0	15	1326	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	44
Lane Group Flow (vph)	0	0	0	0	1359	0	0	419	0	0	54	246
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2021			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.41			c0.25				0.15
v/c Ratio					0.67			0.92			0.12	0.56
Uniform Delay, d1					8.9			24.8			19.2	21.9
Progression Factor					0.65			1.00			1.00	1.00
Incremental Delay, d2					1.7			26.1			0.5	5.1
Delay (s)					7.5			50.8			19.7	27.0
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.5			50.8			25.9	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1170	92	32	68	0	0	211	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3500	1554		1815			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3500	1554		1550			1794	
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)	0	0	0	46	1232	97	34	72	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1278	55	0	106	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	3%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					30.6	30.6		15.0			15.0	
Effective Green, g (s)					30.6	30.6		15.0			15.0	
Actuated g/C Ratio					0.57	0.57		0.28			0.28	
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)					1998	887		434			502	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.37	0.04		0.07				
v/c Ratio					0.64	0.06		0.24			0.60	
Uniform Delay, d1					7.8	5.1		14.9			16.7	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.7	0.0		0.3			1.9	
Delay (s)					8.5	5.1		15.2			18.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.2			15.2			18.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1330	5	18	7	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.96			1.00	
Satd. Flow (prot)					3262			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3262			1676			1777	
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)	0	0	0	35	1415	5	19	7	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1455	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	5%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.9			1.3			1.3	
Effective Green, g (s)					30.4			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2467			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.45			c0.02				
v/c Ratio					0.59			0.35			0.29	
Uniform Delay, d1					2.2			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.4			2.8			2.0	
Delay (s)					2.5			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.5			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	42	1221	12	52	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	46	1342	13	57	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1355			0			785	1447	0	1448	1441	677
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1355			0			785	1447	0	1448	1441	677
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			76	89	100	100	85	97
cM capacity (veh/h)	504			1622			237	127	1084	84	130	400

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	717	684	71	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	202	175
Volume to Capacity	0.03	0.40	0.35	0.18
Queue Length 95th (ft)	2	0	38	16
Control Delay (s)	0.8	0.0	32.3	30.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		32.3	30.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1209	2	471	23	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3297		1618	1630				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3297		1618	1630				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1358	2	529	26	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	156	156	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1360	0	119	124	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.3		10.1	10.1				0.7
Effective Green, g (s)					29.3		11.1	11.1				1.7
Actuated g/C Ratio					0.54		0.21	0.21				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1786		332	334				51
v/s Ratio Prot					c0.41							
v/s Ratio Perm							0.07	0.08				c0.00
v/c Ratio					0.76		0.36	0.37				0.00
Uniform Delay, d1					9.7		18.4	18.5				25.4
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					2.0		0.7	0.7				0.0
Delay (s)					11.6		19.1	19.2				25.4
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.6			19.2			25.4	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1272	184	0	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1339	194	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1339				1339	669
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1339				1339	669
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	77
cM capacity (veh/h)	511				142	395

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	669	669	194	89
Volume Left	0	0	0	0
Volume Right	0	0	194	89
cSH	1700	1700	1700	395
Volume to Capacity	0.39	0.39	0.11	0.23
Queue Length 95th (ft)	0	0	0	21
Control Delay (s)	0.0	0.0	0.0	16.8
Lane LOS				C
Approach Delay (s)	0.0			16.8
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	474	1116	0	0	8	98	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	489	1151	0	0	8	101	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			489	489	489	1639	1639	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			489	489	489	1639	1639	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	0	100	
cM capacity (veh/h)			480	579	490	100	395	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	872	767	8	101
Volume Left	0	0	8	0
Volume Right	384	767	0	0
cSH	1700	1700	490	100
Volume to Capacity	0.51	0.45	0.02	1.01
Queue Length 95th (ft)	0	0	1	155
Control Delay (s)	0.0	0.0	12.5	170.1
Lane LOS			B	F
Approach Delay (s)	0.0		158.2	
Approach LOS			F	

Intersection Summary			
Average Delay	9.9		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	52	0	0	1236	0	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3438		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3438		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	0	0	1343	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	0	0	1343	0	508
Heavy Vehicles (%)	2%	2%	3%	5%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.4			48.1		70.5
Effective Green, g (s)	13.9			48.6		70.5
Actuated g/C Ratio	0.20			0.69		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	349			2370		2787
v/s Ratio Prot	0.03			c0.39		
v/s Ratio Perm						c0.18
v/c Ratio	0.16			0.57		0.18
Uniform Delay, d1	23.5			5.6		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	23.6			6.5		0.1
Level of Service	C			A		A
Approach Delay (s)	23.6			6.5	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	4.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	659	577	467	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1631	1845	3467	
Flt Permitted			0.38	1.00	1.00	
Satd. Flow (perm)			658	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	686	601	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	686	601	518	0
Heavy Vehicles (%)	2%	2%	7%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			51.2	55.7	25.0	
Effective Green, g (s)			52.2	56.2	25.5	
Actuated g/C Ratio			0.74	0.80	0.36	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			856	1471	1254	
v/s Ratio Prot			c0.30	0.33	0.15	
v/s Ratio Perm			c0.29			
v/c Ratio			0.80	0.41	0.41	
Uniform Delay, d1			5.5	2.2	16.9	
Progression Factor			0.63	0.08	1.00	
Incremental Delay, d2			4.5	0.7	0.1	
Delay (s)			7.9	0.8	17.0	
Level of Service			A	A	B	
Approach Delay (s)	0.0			4.6	17.0	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	18.3
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	947	218	0	0	0	21	0	482	307	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.94				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2315				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2315				
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)	1018	234	0	0	0	23	0	518	330	0	0	0
RTOR Reduction (vph)	362	91	0	0	0	23	0	100	0	0	0	0
Lane Group Flow (vph)	259	540	0	0	0	0	0	748	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	10%	48%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	24.2	24.2				2.3		31.5				
Effective Green, g (s)	24.7	24.7				1.3		32.0				
Actuated g/C Ratio	0.35	0.35				0.02		0.46				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	571	587				24		1058				
v/s Ratio Prot								c0.32				
v/s Ratio Perm	0.16	0.33				c0.00						
v/c Ratio	0.45	0.92				0.02		0.71				
Uniform Delay, d1	17.4	21.7				33.7		15.2				
Progression Factor	1.32	0.31				1.00		1.00				
Incremental Delay, d2	1.5	14.7				0.1		2.2				
Delay (s)	24.6	21.3				33.8		17.4				
Level of Service	C	C				C		B				
Approach Delay (s)		22.9			33.8			17.4			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	21	0	0	322	18	45	1413	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1320			4887				
Flt Permitted		0.84			1.00			1.00				
Satd. Flow (perm)		1257			1320			4887				
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)	17	22	0	0	339	19	47	1487	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	355	0	0	1540	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	45%	5%	4%	6%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		23.8			23.8			37.2				
Effective Green, g (s)		24.3			24.3			37.7				
Actuated g/C Ratio		0.35			0.35			0.54				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		436			458			2632				
v/s Ratio Prot					c0.27							
v/s Ratio Perm		0.03						0.32				
v/c Ratio		0.09			0.77			0.58				
Uniform Delay, d1		15.4			20.4			10.9				
Progression Factor		0.69			1.00			0.80				
Incremental Delay, d2		0.1			8.0			0.6				
Delay (s)		10.7			28.4			9.4				
Level of Service		B			C			A				
Approach Delay (s)		10.7			28.4			9.4			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	64	1465	96	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1712	1504		4522				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4522				
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)	95	152	0	0	86	120	67	1542	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	24	0	9	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	72	0	1701	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	6%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.3			17.3	17.3		44.2				
Effective Green, g (s)		17.8			17.8	17.8		44.2				
Actuated g/C Ratio		0.25			0.25	0.25		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		316			435	382		2855				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.38				
v/c Ratio		0.78			0.22	0.19		0.60				
Uniform Delay, d1		24.3			20.6	20.4		7.6				
Progression Factor		0.96			1.00	1.00		1.83				
Incremental Delay, d2		11.3			0.3	0.2		0.8				
Delay (s)		34.6			20.9	20.7		14.8				
Level of Service		C			C	C		B				
Approach Delay (s)		34.6			20.8			14.8			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	17.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
307: S "K" Street & W Heron Street #1012

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	76	31	0	0	71	32	28	1461	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1785			4381				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4381				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	87	36	0	0	82	37	32	1679	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	19	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	100	0	0	1760	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.5			11.5			50.0				
Effective Green, g (s)		12.0			12.0			50.0				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		227			306			3129				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.09						0.40				
v/c Ratio		0.54			0.33			0.56				
Uniform Delay, d1		26.5			25.5			4.8				
Progression Factor		1.61			1.00			0.26				
Incremental Delay, d2		2.6			0.6			0.6				
Delay (s)		45.1			26.1			1.8				
Level of Service		D			C			A				
Approach Delay (s)		45.1			26.1			1.8			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	233	25	0	0	32	18	54	1635	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4390				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4390				
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)	248	27	0	0	34	19	57	1739	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	275	0	0	42	0	0	1816	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.4			20.4			39.6				
Effective Green, g (s)		20.9			20.9			41.1				
Actuated g/C Ratio		0.30			0.30			0.59				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		315			423			2578				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.41				
v/c Ratio		0.87			0.10			0.70				
Uniform Delay, d1		23.3			17.7			10.2				
Progression Factor		0.67			1.00			0.57				
Incremental Delay, d2		22.1			0.1			1.4				
Delay (s)		37.7			17.8			7.2				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.8			7.2			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1607	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1374			4395				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1374			4395				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	60	17	0	0	8	11	25	1826	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	9	0	0	1868	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		151			183			3309				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.43				
v/c Ratio		0.51			0.05			0.56				
Uniform Delay, d1		28.2			26.5			3.7				
Progression Factor		0.82			1.00			0.26				
Incremental Delay, d2		2.6			0.1			0.5				
Delay (s)		25.9			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		25.9			26.6			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	56	37	34	35	0	0	0	0	17	1314	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4426	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1185						4426	
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)	0	62	41	38	39	0	0	0	0	19	1460	40
RTOR Reduction (vph)	0	35	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	68	0	0	77	0	0	0	0	0	1517	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.5			8.5						53.0	
Effective Green, g (s)		9.0			9.0						53.0	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		181			152						3351	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.06						0.34	
v/c Ratio		0.38			0.51						0.45	
Uniform Delay, d1		27.9			28.4						3.1	
Progression Factor		1.00			0.94						0.69	
Incremental Delay, d2		1.3			2.6						0.4	
Delay (s)		29.2			29.4						2.6	
Level of Service		C			C						A	
Approach Delay (s)		29.2			29.4			0.0			2.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	145	35	24	68	0	0	0	0	8	1173	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1451			1471						4404	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1451			1325						4404	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	158	38	26	74	0	0	0	0	9	1275	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	100	0	0	0	0	0	1361	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		13.9			13.9						46.1	
Effective Green, g (s)		14.4			14.4						47.6	
Actuated g/C Ratio		0.21			0.21						0.68	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		298			273						2995	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.08						0.31	
v/c Ratio		0.61			0.37						0.45	
Uniform Delay, d1		25.2			23.9						5.2	
Progression Factor		1.00			0.95						0.26	
Incremental Delay, d2		3.5			0.8						0.5	
Delay (s)		28.7			23.5						1.8	
Level of Service		C			C						A	
Approach Delay (s)		28.7			23.5			0.0			1.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1188	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1448			1471						4429	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1448			1339						4429	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	82	22	17	49	0	0	0	0	21	1291	27
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	87	0	0	66	0	0	0	0	0	1337	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.4			8.4						53.1	
Effective Green, g (s)		8.9			8.9						53.1	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		184			170						3360	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.30	
v/c Ratio		0.47			0.39						0.40	
Uniform Delay, d1		28.4			28.1						2.9	
Progression Factor		1.00			0.55						0.24	
Incremental Delay, d2		1.9			1.4						0.3	
Delay (s)		30.3			16.9						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.3			16.9			0.0			1.0	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
313: S "L" Street & W Wishkah Street #1011

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	104	15	57	84	0	0	0	0	131	1051	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						0.99	
Satd. Flow (prot)		1831			1826						4531	
Flt Permitted		1.00			0.85						0.99	
Satd. Flow (perm)		1831			1577						4531	
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)	0	109	16	60	88	0	0	0	0	138	1106	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	148	0	0	0	0	0	1273	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		536			462						2686	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.28	
v/c Ratio		0.22			0.32						0.47	
Uniform Delay, d1		18.7			19.3						8.1	
Progression Factor		1.00			0.97						0.86	
Incremental Delay, d2		0.9			1.7						0.6	
Delay (s)		19.6			20.5						7.5	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.5			0.0			7.5	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	192	163	0	0	0	0	21	349	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.92	0.85
Flt Protected					0.97						1.00	1.00
Satd. Flow (prot)					977						2476	1400
Flt Permitted					0.97						1.00	1.00
Satd. Flow (perm)					977						2476	1400
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)	0	0	0	204	173	0	0	0	0	22	371	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	218	218
Lane Group Flow (vph)	0	0	0	0	377	0	0	0	0	0	582	189
Heavy Vehicles (%)	2%	2%	2%	91%	5%	2%	2%	2%	2%	0%	15%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					29.0						32.0	32.0
Effective Green, g (s)					29.5						32.5	32.5
Actuated g/C Ratio					0.42						0.46	0.46
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					412						1150	650
v/s Ratio Prot												
v/s Ratio Perm					0.39						0.24	0.14
v/c Ratio					0.92						0.51	0.29
Uniform Delay, d1					19.1						13.1	11.6
Progression Factor					1.01						0.20	0.19
Incremental Delay, d2					20.9						1.4	1.0
Delay (s)					40.3						4.1	3.2
Level of Service					D						A	A
Approach Delay (s)		0.0			40.3			0.0			3.8	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
318: Simpson Avenue/N Park Street #1012 & W Wishkah Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1109	22	0	0	0	0	0	0	19	502	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3112									2274	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3112									2274	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1275	25	0	0	0	0	0	0	22	577	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	1299	0	0	0	0	0	0	0	0	595	0
Heavy Vehicles (%)	0%	4%	10%	2%	2%	2%	2%	2%	2%	0%	36%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		36.1									24.9	
Effective Green, g (s)		36.6									25.4	
Actuated g/C Ratio		0.52									0.36	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1627									825	
v/s Ratio Prot		c0.42										
v/s Ratio Perm											0.26	
v/c Ratio		0.80									0.72	
Uniform Delay, d1		13.7									19.2	
Progression Factor		0.82									1.29	
Incremental Delay, d2		3.6									2.4	
Delay (s)		14.8									27.3	
Level of Service		B									C	
Approach Delay (s)		14.8			0.0			0.0			27.3	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1461	397	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1242			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1242			
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)	124	692	0	0	0	0	0	1538	418	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	804	0	0	0	0	0	1538	381	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	4%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		18.8						42.7	42.7			
Effective Green, g (s)		18.8						43.2	43.2			
Actuated g/C Ratio		0.27						0.62	0.62			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1229						1892	766			
v/s Ratio Prot								c0.50				
v/s Ratio Perm		0.18							0.31			
v/c Ratio		0.65						0.81	0.50			
Uniform Delay, d1		22.7						10.3	7.4			
Progression Factor		0.88						1.87	2.15			
Incremental Delay, d2		1.2						3.4	2.0			
Delay (s)		21.2						22.7	17.9			
Level of Service		C						C	B			
Approach Delay (s)		21.2			0.0			21.7			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	553	411	76	1407	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3254			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3254			2943				
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)	0	0	0	0	570	424	78	1451	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	976	0	0	1524	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					23.4			37.6				
Effective Green, g (s)					23.9			38.1				
Actuated g/C Ratio					0.34			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1111			1602				
v/s Ratio Prot					c0.30							
v/s Ratio Perm								0.52				
v/c Ratio					0.88			0.95				
Uniform Delay, d1					21.7			15.1				
Progression Factor					1.00			0.76				
Incremental Delay, d2					8.1			9.1				
Delay (s)					29.7			20.6				
Level of Service					C			C				
Approach Delay (s)		0.0			29.7			20.6			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1118	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2948									4361	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4361	
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)	0	290	45	0	0	0	0	0	0	394	1202	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	57	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1539	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.7									48.3	
Effective Green, g (s)		13.2									48.8	
Actuated g/C Ratio		0.19									0.70	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		556									3040	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.35	
v/c Ratio		0.56									0.51	
Uniform Delay, d1		25.8									5.0	
Progression Factor		1.00									0.65	
Incremental Delay, d2		1.3									0.5	
Delay (s)		27.1									3.8	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			3.8	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	324	296	0	0	0	0	0	1272	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.99						1.00	
Satd. Flow (prot)				1264	3277						4415	
Flt Permitted				0.95	0.99						1.00	
Satd. Flow (perm)				1264	3277						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	352	322	0	0	0	0	0	1383	68
RTOR Reduction (vph)	0	0	0	25	25	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	193	431	0	0	0	0	0	1445	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				16.8	16.8						44.2	
Effective Green, g (s)				17.3	17.3						44.7	
Actuated g/C Ratio				0.25	0.25						0.64	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				312	810						2819	
v/s Ratio Prot				c0.15	0.13						c0.33	
v/s Ratio Perm												
v/c Ratio				0.62	0.53						0.51	
Uniform Delay, d1				23.4	22.8						6.8	
Progression Factor				1.20	1.25						1.00	
Incremental Delay, d2				1.9	0.4						0.7	
Delay (s)				30.0	29.0						7.5	
Level of Service				C	C						A	
Approach Delay (s)		0.0			29.3			0.0			7.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
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)	11	1238	36	28	1027	2	349	8	18	17	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.98	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3311		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3125		1727	3311		1681	1672			1762	
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)	13	1456	42	33	1208	2	411	9	21	20	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1510	0	33	1210	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	9%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.3		5.4	80.7		17.3	17.3			5.0	
Effective Green, g (s)		72.3		5.4	81.7		18.3	18.3			6.0	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1915		79	2292		261	259			90	
v/s Ratio Prot				0.02	c0.37		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.53		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.8		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.56		1.00	1.00			1.00	
Incremental Delay, d2		3.4		2.8	0.7		22.4	19.9			1.7	
Delay (s)		20.5		59.5	5.6		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.5			7.0			69.6			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1575	102	53	1079	0	215	8	109	51	19	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3312		1727	3312		1665	1552			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3312		1727	3312		1665	1552			1751	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	1641	106	55	1124	0	224	8	114	53	20	25
RTOR Reduction (vph)	0	3	0	0	0	0	0	66	0	0	13	0
Lane Group Flow (vph)	26	1744	0	55	1124	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	9%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.3		7.6	66.3		14.5	14.5			11.6	
Effective Green, g (s)	6.6	66.3		7.6	67.3		15.5	15.5			12.6	
Actuated g/C Ratio	0.06	0.56		0.06	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1861		111	1889		219	204			187	
v/s Ratio Prot	0.02	c0.53		0.03	c0.34		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.27	0.94		0.50	0.60		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.9		53.3	16.5		49.9	47.6			49.5	
Progression Factor	0.78	0.60		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	8.6		2.5	1.4		21.0	2.2			2.1	
Delay (s)	42.3	22.9		55.9	17.9		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		23.2			19.6			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	963	3	516	903	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.93	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3176		3002	1491		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3176		3002	1491		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1189	4	637	1115	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1193	0	1195	557	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	16%	7%	7%	16%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	39.2		40.5	91.7		40.5
Effective Green, g (s)	41.2		42.5	91.7		42.5
Actuated g/C Ratio	0.45		0.46	1.00		0.46
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1427		1391	1491		1231
v/s Ratio Prot	c0.38		c0.40	0.37		0.14
v/s Ratio Perm						
v/c Ratio	0.84		0.86	0.37		0.31
Uniform Delay, d1	22.3		21.9	0.0		15.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	4.3		5.4	0.7		0.1
Delay (s)	26.6		27.4	0.7		15.5
Level of Service	C		C	A		B
Approach Delay (s)	26.6		18.9		15.5	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	91.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	20	0	0	8	19	635	1	3	340	55
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	21	0	0	8	20	668	1	3	358	58
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1117	1110	394	1096	1138	671	422			670		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1117	1110	394	1096	1138	671	422			670		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	178	205	655	182	197	459	1136			919		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	676	3	416
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	655	459	1136	1136	919	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.24
Queue Length 95th (ft)	2	1	1	1	0	0
Control Delay (s)	10.7	13.0	8.2	0.3	8.9	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.0	0.5		0.1	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	38.6%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
332: S M Street & W State Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	24	1	10	0	2	4	14	590	2	2	292	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	26	1	11	0	2	4	15	634	2	2	314	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1004	1001	330	995	1015	635	345			637		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1004	1001	330	995	1015	635	345			637		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	98	100	99	99	99			100		
cM capacity (veh/h)	216	240	714	218	236	480	1219			947		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	637	2	345
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	270	357	1219	1700	947	1700
Volume to Capacity	0.14	0.02	0.01	0.37	0.00	0.20
Queue Length 95th (ft)	12	1	1	0	0	0
Control Delay (s)	20.5	15.3	8.0	0.0	8.8	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	20.5	15.3	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	2	557	2	2	222	328
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	2	640	2	2	255	377
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1101	1095	444	909	1283	641	632			643		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1101	1095	444	909	1283	641	632			643		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	88	100	99	100	96	99	100			100		
cM capacity (veh/h)	183	214	618	244	158	459	960			952		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	643	2	632
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	377
cSH	203	223	960	1700	952	1700
Volume to Capacity	0.12	0.05	0.00	0.38	0.00	0.37
Queue Length 95th (ft)	10	4	0	0	0	0
Control Delay (s)	25.3	22.0	8.8	0.0	8.8	0.0
Lane LOS	D	C	A		A	
Approach Delay (s)	25.3	22.0	0.0		0.0	
Approach LOS	D	C				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	534	30	0	0	0	1	82	1	2	227	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	562	32	0	0	0	1	86	1	2	239	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			594			712	578	578	622	594	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			594			712	578	578	622	594	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	80	100	99	43	99
cM capacity (veh/h)	1604			992			188	428	518	336	418	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	594	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	423	433
Volume to Capacity	0.00	0.00	0.21	0.59
Queue Length 95th (ft)	0	0	19	93
Control Delay (s)	0.0	0.0	15.8	24.7
Lane LOS			C	C
Approach Delay (s)	0.0	0.0	15.8	24.7
Approach LOS			C	C

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	573	8	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	599	1	3	616	9	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1222	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1222	599
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		95	99
cM capacity (veh/h)			948		159	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	619	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	181
Volume to Capacity	0.35	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	26.1
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	26.1
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	550	0	2	598	10	0	1	0	8	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	598	0	2	650	11	0	1	0	9	2	8
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			601			1288	1284	603	1279	1279	657
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			601			1288	1284	603	1279	1279	657
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	94	99	98
cM capacity (veh/h)	912			959			136	164	500	138	161	457

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	663	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	912	959	164	198
Volume to Capacity	0.01	0.00	0.01	0.09
Queue Length 95th (ft)	1	0	1	8
Control Delay (s)	0.3	0.1	27.1	25.1
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	27.1	25.1
Approach LOS			D	D

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	553	1	1	593	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	601	1	1	645	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	646			602			1252	1252	602	1252	1252	645
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	646			602			1252	1252	602	1252	1252	645
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	99	100	100
cM capacity (veh/h)	925			961			148	172	500	148	172	472

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	603	647	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	925	961	229	226
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	20.9	21.1
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	20.9	21.1
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	468	34	186	468	11	76	2	164	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	514	37	204	514	12	84	2	180	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			552			1599	1571	535	1749	1584	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			552			1599	1571	535	1749	1584	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			70			0	97	67	43	98	94
cM capacity (veh/h)	1021			691			60	75	548	33	72	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	602	731	266	54
Volume Left	51	204	84	19
Volume Right	37	12	180	34
cSH	1021	691	151	83
Volume to Capacity	0.05	0.30	1.76	0.65
Queue Length 95th (ft)	4	31	487	76
Control Delay (s)	1.3	7.3	419.0	107.0
Lane LOS	A	A	F	F
Approach Delay (s)	1.3	7.3	419.0	107.0
Approach LOS			F	F

Intersection Summary			
Average Delay	74.6		
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	649	0	0	27	664
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	705	0	0	29	722
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			780	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			780	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			357	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	705	29	722
Volume Left	0	29	0
Volume Right	705	0	0
cSH	1700	1578	1700
Volume to Capacity	0.41	0.02	0.42
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	662	5	0	192	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	727	5	0	211	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1458	1458	1460	0
vC1, stage 1 conf vol			1458	1458	0	
vC2, stage 2 conf vol			0	0	1460	
vCu, unblocked vol	0		1458	1458	1460	0
tC, single (s)	4.2		7.1	7.3	6.5	6.2
tC, 2 stage (s)			6.1	6.3	5.5	
tF (s)	2.3		3.5	4.8	4.0	3.3
p0 queue free %	54		100	0	100	100
cM capacity (veh/h)	1597		80	47	95	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	485	248	211
Volume Left	485	242	0
Volume Right	0	5	0
cSH	1597	1597	47
Volume to Capacity	0.46	0.46	4.46
Queue Length 95th (ft)	61	61	Err
Control Delay (s)	9.1	9.0	Err
Lane LOS	A	A	F
Approach Delay (s)	9.1		Err
Approach LOS			F

Intersection Summary			
Average Delay	2242.0		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
356: N Monroe Street & W Heron Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	21	3	0	0	169	7	12	830	20	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	3	0	0	192	8	14	943	23	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	603	993	0	984	982	483	0			966		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	603	993	0	984	982	483	0			966		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	99	100	100	22	99	99			100		
cM capacity (veh/h)	136	245	1091	201	247	532	1600			709		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	485	494
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	144	253	1600	1700
Volume to Capacity	0.19	0.79	0.01	0.29
Queue Length 95th (ft)	17	149	1	0
Control Delay (s)	35.6	57.6	0.3	0.0
Lane LOS	E	F	A	
Approach Delay (s)	35.6	57.6	0.1	
Approach LOS	E	F		

Intersection Summary				
Average Delay		10.5		
Intersection Capacity Utilization		46.6%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
357: N Lincoln Street & W Heron Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	6	0	0	16	2	5	844	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	6	0	0	17	2	5	879	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	460	895	2	897	892	442	0			884		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460	895	2	897	892	442	0			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	94	100	100			100		
cM capacity (veh/h)	464	281	1086	233	282	569	1593			761		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	445	445
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	357	299	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.26
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	15.5	17.8	0.1	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.5	17.8	0.1	
Approach LOS	C	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	31	797	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	105	9	36	927	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	600	1013	4	1011	1009	471	3			938		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600	1013	4	1011	1009	471	3			938		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	94	97	100	100	49	98	98			100		
cM capacity (veh/h)	200	204	1019	162	205	492	1592			724		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	499	470
Volume Left	12	0	36	0
Volume Right	0	9	0	7
cSH	202	215	1592	1700
Volume to Capacity	0.09	0.53	0.02	0.28
Queue Length 95th (ft)	8	69	2	0
Control Delay (s)	24.7	39.2	0.7	0.0
Lane LOS	C	E	A	
Approach Delay (s)	24.7	39.2	0.4	
Approach LOS	C	E		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	34	0	0	0	0	3	509	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	4	100	40	0	0	0	0	4	606	10
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.88	0.88	0.88	0.88	0.88		0.88					
vC, conflicting volume	641	628	311	328	633	7	618			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	308	293	0	0	299	7	283			7		
tC, single (s)	7.8	6.8	7.2	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.4	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	92	100	100			100		
cM capacity (veh/h)	481	510	912	853	527	1055	1116			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	140	307	312
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	559	724	1541	1700
Volume to Capacity	0.03	0.19	0.00	0.18
Queue Length 95th (ft)	2	18	0	0
Control Delay (s)	11.7	11.2	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.7	11.2	0.1	
Approach LOS	B	B		

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
360: N Lincoln Street & W Wishkah Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	570	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	613	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	650	642	315	340	648	4	626			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	642	315	340	648	4	626			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	347	392	687	575	389	1080	952			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	317	319
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	418	481	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.9	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.9	13.0	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		35.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	525	65	0	30	1	121	41	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	559	69	0	32	1	129	44	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	628			0			643	621	316	326	655	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628			0			643	621	316	326	655	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	77	89	100
cM capacity (veh/h)	950			1565			329	403	686	565	383	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	293	348	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	408	504
Volume to Capacity	0.01	0.20	0.08	0.34
Queue Length 95th (ft)	1	0	7	38
Control Delay (s)	0.4	0.0	14.6	15.8
Lane LOS	A		B	C
Approach Delay (s)	0.2		14.6	15.8
Approach LOS			B	C

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	176	0	176	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	191	0	191	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	240			29			165	174	145	261	261	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240			29			165	174	145	261	261	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	67	100	99	100	100
cM capacity (veh/h)	1326			1584			804	574	908	504	634	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	240	191	5
Volume Left	0	0	0	5
Volume Right	17	191	0	0
cSH	1326	1584	574	504
Volume to Capacity	0.00	0.00	0.33	0.01
Queue Length 95th (ft)	0	0	36	1
Control Delay (s)	0.0	0.0	14.4	12.2
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	14.4	12.2
Approach LOS			B	B

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	233	1	1	10	220	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	253	1	1	11	239	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	253	240	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	253	240	240			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	66	100	100			
cM capacity (veh/h)	740	799	1338			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	254	12	240
Volume Left	253	1	0
Volume Right	1	0	1
cSH	740	1338	1700
Volume to Capacity	0.34	0.00	0.14
Queue Length 95th (ft)	38	0	0
Control Delay (s)	12.4	0.7	0.0
Lane LOS	B	A	
Approach Delay (s)	12.4	0.7	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
371: Port Industrial Road & W 1st Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	507	6	16	3	5	5	0	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	39	452	5	5	583	7	18	3	6	6	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	583			456			1172	1124	454	1133	1130	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			456			1172	1124	454	1133	1130	586
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			87	98	99	96	100	90
cM capacity (veh/h)	949			1115			141	189	588	163	187	494

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	590	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	949	1700	1115	1700	174	406
Volume to Capacity	0.04	0.27	0.00	0.35	0.16	0.13
Queue Length 95th (ft)	3	0	0	0	14	11
Control Delay (s)	9.0	0.0	8.2	0.0	29.5	15.2
Lane LOS	A		A		D	C
Approach Delay (s)	0.7		0.1		29.5	15.2
Approach LOS					D	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	446	110	8	14	38	52	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	361	11	16	485	120	9	15	41	57	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	604			372			1013	1040	366	1029	986	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	604			372			1013	1040	366	1029	986	545
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			95	93	94	69	97	95
cM capacity (veh/h)	936			1144			186	212	653	184	240	541

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	621	65	92
Volume Left	18	16	9	57
Volume Right	11	120	41	29
cSH	936	1144	359	237
Volume to Capacity	0.02	0.01	0.18	0.39
Queue Length 95th (ft)	2	1	16	44
Control Delay (s)	0.6	0.4	17.2	29.5
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	17.2	29.5
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	288	2	4	0	339	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	324	2	4	0	381	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381			326			356	737	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			326			356	737	325	406	357	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	89	95	100	100	100
cM capacity (veh/h)	1151			596			591	340	716	481	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	381	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	381	33
cSH	1151	1700	596	1700	453
Volume to Capacity	0.01	0.19	0.01	0.22	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.2	0.0	11.1	0.0	14.4
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.1		14.4
Approach LOS					B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/12/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	39	0	2	0	0	0	31	50	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	0	2	0	0	0	36	59	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		112	94	0	170	93	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		112	94	0	170	93	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	95	100	95	100
cM capacity (veh/h)	1554			1620		809	767	1076	711	777	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	48	0	95	40
Volume Left	46	0	0	2
Volume Right	2	0	59	0
cSH	1554	1700	932	773
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	332	4	15	450	31	10	7	24	32	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1770			1844			1759	1538		1747	
Flt Permitted		0.98			0.99			0.79	1.00		0.80	
Satd. Flow (perm)		1744			1824			1429	1538		1446	
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)	12	357	4	16	484	33	11	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	373	0	0	531	0	0	19	3	0	44	0
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		24.1			24.1			4.3	4.3		4.3	
Effective Green, g (s)		24.6			24.6			4.8	4.8		4.8	
Actuated g/C Ratio		0.66			0.66			0.13	0.13		0.13	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1147			1200			183	197		186	
v/s Ratio Prot												
v/s Ratio Perm		0.21			c0.29			0.01	0.00		c0.03	
v/c Ratio		0.32			0.44			0.10	0.02		0.24	
Uniform Delay, d1		2.8			3.1			14.4	14.2		14.7	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.3	0.0		0.7	
Delay (s)		3.0			3.4			14.7	14.3		15.3	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.0			3.4			14.4			15.3	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	37.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	2	262	19	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	203	17	2	298	22	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			220		506	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					302	
vCu, unblocked vol			220		506	203
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		97	100
cM capacity (veh/h)			1355		655	808

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	2	298	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1355	1700	672
Volume to Capacity	0.12	0.01	0.00	0.18	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.6
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.6
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	1207	11	0	0	0	0	55	24	16	81	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3343						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3343						3240			3066	
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)	128	1298	12	0	0	0	0	59	26	17	87	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1438	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2622						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.43									c0.03	
v/c Ratio		0.55						0.19			0.33	
Uniform Delay, d1		2.9						28.8			29.3	
Progression Factor		1.00						1.00			0.59	
Incremental Delay, d2		0.8						0.3			0.6	
Delay (s)		3.7						29.1			17.8	
Level of Service		A						C			B	
Approach Delay (s)		3.7			0.0			29.1			17.8	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1180	64	0	0	0	0	80	121	77	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3335						1711			1621	
Flt Permitted		1.00						1.00			0.73	
Satd. Flow (perm)		3335						1711			1204	
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)	18	1388	75	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	1477	0	0	0	0	0	211	0	0	187	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		30.4						14.8			14.8	
Effective Green, g (s)		30.4						14.8			14.8	
Actuated g/C Ratio		0.57						0.28			0.28	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1906						476			335	
v/s Ratio Prot								0.12				
v/s Ratio Perm		0.44									c0.16	
v/c Ratio		0.77						0.44			0.56	
Uniform Delay, d1		8.8						15.8			16.4	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.0						0.7			2.0	
Delay (s)		10.7						16.5			18.4	
Level of Service		B						B			B	
Approach Delay (s)		10.7			0.0			16.5			18.4	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	53.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1167	18	0	0	0	0	25	24	25	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3351						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3351						1597			1355	
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)	23	1203	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1244	0	0	0	0	0	29	0	0	55	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		30.8						4.5			4.5	
Effective Green, g (s)		31.3						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2368						180			153	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.37									c0.04	
v/c Ratio		0.53						0.16			0.36	
Uniform Delay, d1		3.0						17.8			18.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.4			1.4	
Delay (s)		3.2						18.2			19.6	
Level of Service		A						B			B	
Approach Delay (s)		3.2			0.0			18.2			19.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	44.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
418: Simpson Avenue/N Park Street #1012 & Ontario Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	1191	19	0	0	0	0	31	36	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	48	1228	20	0	0	0	0	32	37	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1247			1358	1335	624	764	1344	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1247			1358	1335	624	764	1344	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	78	91	79	69	100
cM capacity (veh/h)	1607			554			79	147	426	220	148	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	662	634	69	92
Volume Left	48	0	0	45
Volume Right	0	20	37	0
cSH	1607	1700	226	177
Volume to Capacity	0.03	0.37	0.31	0.52
Queue Length 95th (ft)	2	0	31	65
Control Delay (s)	0.9	0.0	27.7	45.4
Lane LOS	A		D	E
Approach Delay (s)	0.4		27.7	45.4
Approach LOS			D	E

Intersection Summary			
Average Delay		4.6	
Intersection Capacity Utilization		53.0%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	859	12	0	0	0	0	415	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3323						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	934	13	0	0	0	0	451	9	0	0	0
RTOR Reduction (vph)	54	2	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	54	945	0	0	0	0	0	458	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	19.0	19.0						11.1				
Effective Green, g (s)	20.0	20.0						12.1				
Actuated g/C Ratio	0.50	0.50						0.30				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	874	1657						1054				
v/s Ratio Prot		c0.28						c0.13				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.57						0.43				
Uniform Delay, d1	5.2	7.0						11.3				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.5						0.3				
Delay (s)	5.2	7.5						11.5				
Level of Service	A	A						B				
Approach Delay (s)		7.3			0.0			11.5			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1076	70	0	0	0	0	27	171	41	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1575	1504		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.75	
Satd. Flow (perm)		2893	1300					1575	1504		1393	
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)	18	1157	75	0	0	0	0	29	184	44	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	47	47	0	0	0
Lane Group Flow (vph)	0	1175	66	0	0	0	0	61	58	0	78	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.2	53.2					7.8	7.8		7.8	
Effective Green, g (s)		53.7	53.7					8.3	8.3		8.3	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2219	997					187	178		165	
v/s Ratio Prot		c0.41						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.53	0.07					0.33	0.33		0.47	
Uniform Delay, d1		3.2	2.0					28.3	28.3		28.8	
Progression Factor		0.31	0.29					1.00	1.00		1.00	
Incremental Delay, d2		0.8	0.1					1.0	1.1		2.1	
Delay (s)		1.8	0.7					29.3	29.4		30.9	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.7			0.0			29.3			30.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1047	24	0	0	0	0	12	86	7	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2882						1314			1462	
Flt Permitted		1.00						1.00			0.87	
Satd. Flow (perm)		2882						1314			1291	
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)	24	1102	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	56	0	0	0	0
Lane Group Flow (vph)	0	1150	0	0	0	0	0	48	0	0	18	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.8						7.2			7.2	
Effective Green, g (s)		54.8						7.2			7.2	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2256						135			133	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.40									0.01	
v/c Ratio		0.51						0.36			0.14	
Uniform Delay, d1		2.7						29.2			28.6	
Progression Factor		0.39						1.00			1.00	
Incremental Delay, d2		0.6						1.6			0.5	
Delay (s)		1.7						30.9			29.0	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			30.9			29.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	906	16	0	0	0	0	0	29	289	216	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2887							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2887							1289	1681	1405	
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)	0	954	17	0	0	0	0	0	31	304	227	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	178	9	0
Lane Group Flow (vph)	0	969	0	0	0	0	0	0	4	83	261	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		28.6							9.5	18.4	18.4	
Effective Green, g (s)		29.1							10.0	18.9	18.9	
Actuated g/C Ratio		0.42							0.14	0.27	0.27	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1200							184	454	379	
v/s Ratio Prot		c0.34							c0.00	0.05	c0.19	
v/s Ratio Perm												
v/c Ratio		0.81							0.02	0.18	0.69	
Uniform Delay, d1		18.0							25.8	19.6	22.9	
Progression Factor		1.09							1.00	1.00	1.00	
Incremental Delay, d2		5.5							0.2	0.9	9.8	
Delay (s)		25.1							26.0	20.5	32.7	
Level of Service		C							C	C	C	
Approach Delay (s)		25.1			0.0			26.0			26.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	25.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	383	12	0	0	0	0	45	25	460	47	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2879						1418		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2879						1418		1681	1360	
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)	7	407	13	0	0	0	0	48	27	489	50	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	424	0	0	0	0	0	51	0	269	270	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		17.6						6.9		32.0	32.0	
Effective Green, g (s)		18.1						7.4		32.5	32.5	
Actuated g/C Ratio		0.26						0.11		0.46	0.46	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		744						150		780	631	
v/s Ratio Prot								c0.04		0.16	c0.20	
v/s Ratio Perm		0.15										
v/c Ratio		0.57						0.34		0.34	0.43	
Uniform Delay, d1		22.6						29.0		12.0	12.5	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.0						1.3		1.2	2.1	
Delay (s)		23.6						30.4		13.2	14.7	
Level of Service		C						C		B	B	
Approach Delay (s)		23.6			0.0			30.4			13.9	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	309	0	517	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1791		2111		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1791		2111		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	343	0	574	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	343	0	574	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		29.3		29.3		
Effective Green, g (s)		29.3		29.3		
Actuated g/C Ratio		0.74		0.74		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1332		1570		
v/s Ratio Prot		0.19		c0.27		
v/s Ratio Perm						
v/c Ratio		0.26		0.37		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.1		
Delay (s)		1.7		1.9		
Level of Service		A		A		
Approach Delay (s)	1.7			1.9	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	39.4	Sum of lost time (s)	10.1
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	894	22	18	163	0	0	90	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3490			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3490			3041			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	931	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	78	0
Lane Group Flow (vph)	0	0	0	0	967	0	0	189	0	0	269	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					49.1			11.9			11.9	
Effective Green, g (s)					49.6			12.4			12.4	
Actuated g/C Ratio					0.71			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2473			539			531	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.28			0.06				
v/c Ratio					0.39			0.35			0.51	
Uniform Delay, d1					4.1			25.3			26.0	
Progression Factor					1.16			1.04			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					5.2			26.6			26.8	
Level of Service					A			C			C	
Approach Delay (s)		0.0			5.2			26.6			26.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1196	19	13	381	0	0	51	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
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3353			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3353			1679			1710	1615
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)	0	0	0	15	1272	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	50
Lane Group Flow (vph)	0	0	0	0	1305	0	0	419	0	0	54	240
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2060			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.39			c0.25				0.15
v/c Ratio					0.63			0.92			0.12	0.55
Uniform Delay, d1					8.5			24.8			19.2	21.8
Progression Factor					0.67			1.00			1.00	1.00
Incremental Delay, d2					1.4			26.1			0.5	4.9
Delay (s)					7.2			50.8			19.7	26.7
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.2			50.8			25.6	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	70.0	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)	0	0	0	44	1120	92	32	68	0	0	211	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3567	1554		1815			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3567	1554		1551			1794	
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)	0	0	0	46	1179	97	34	72	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1225	54	0	106	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					29.0	29.0		14.7			14.7	
Effective Green, g (s)					29.0	29.0		14.7			14.7	
Actuated g/C Ratio					0.56	0.56		0.28			0.28	
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)					2001	872		441			510	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.34	0.04		0.07				
v/c Ratio					0.61	0.06		0.24			0.59	
Uniform Delay, d1					7.6	5.2		14.2			15.9	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.3			1.7	
Delay (s)					8.2	5.2		14.5			17.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			7.9			14.5			17.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	51.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1280	5	18	7	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.96			1.00	
Satd. Flow (prot)					3324			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3324			1676			1777	
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)	0	0	0	35	1362	5	19	7	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1402	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.9			1.3			1.3	
Effective Green, g (s)					30.4			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2514			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.42			c0.02				
v/c Ratio					0.56			0.35			0.29	
Uniform Delay, d1					2.1			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			2.8			2.0	
Delay (s)					2.3			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.3			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	42	1171	12	52	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	46	1287	13	57	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1300			0			758	1392	0	1393	1386	650
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1300			0			758	1392	0	1393	1386	650
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			77	90	100	100	86	97
cM capacity (veh/h)	529			1622			251	137	1084	93	140	417

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	690	657	71	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	215	188
Volume to Capacity	0.03	0.39	0.33	0.17
Queue Length 95th (ft)	2	0	35	15
Control Delay (s)	0.8	0.0	29.8	28.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		29.8	28.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1159	2	471	23	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3361		1618	1630				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1618	1630				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1302	2	529	26	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	158	158	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1304	0	117	122	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					26.4		10.0	10.0				0.6
Effective Green, g (s)					27.4		11.0	11.0				1.6
Actuated g/C Ratio					0.53		0.21	0.21				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1771		342	345				50
v/s Ratio Prot					c0.39							
v/s Ratio Perm							0.07	0.08				c0.00
v/c Ratio					0.74		0.34	0.35				0.00
Uniform Delay, d1					9.5		17.4	17.5				24.4
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.6		0.6	0.6				0.0
Delay (s)					11.1		18.0	18.1				24.5
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.1			18.1			24.5	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1222	184	0	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1286	194	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1286				1286	643
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1286				1286	643
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	78
cM capacity (veh/h)	535				153	411

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	643	643	194	89
Volume Left	0	0	0	0
Volume Right	0	0	194	89
cSH	1700	1700	1700	411
Volume to Capacity	0.38	0.38	0.11	0.22
Queue Length 95th (ft)	0	0	0	20
Control Delay (s)	0.0	0.0	0.0	16.2
Lane LOS				C
Approach Delay (s)	0.0			16.2
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
479: Sumner Avenue/N Alder Street/Lincoln Street #1011 & 6th Street

8/12/2009

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	474	1066	0	0	8	98	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	489	1099	0	0	8	101	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			489	489	489	1588	1588	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			489	489	489	1588	1588	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	6	100	
cM capacity (veh/h)			480	579	490	108	413	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	855	733	8	101
Volume Left	0	0	8	0
Volume Right	366	733	0	0
cSH	1700	1700	490	108
Volume to Capacity	0.50	0.43	0.02	0.94
Queue Length 95th (ft)	0	0	1	144
Control Delay (s)	0.0	0.0	12.5	143.6
Lane LOS			B	F
Approach Delay (s)	0.0		133.7	
Approach LOS			F	

Intersection Summary			
Average Delay	8.6		
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	52	0	0	1186	0	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	0	0	1289	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	0	0	1289	0	508
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.3			46.7		69.0
Effective Green, g (s)	13.8			47.2		69.0
Actuated g/C Ratio	0.20			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	354			2398		2787
v/s Ratio Prot	0.03			c0.37		
v/s Ratio Perm						c0.18
v/c Ratio	0.16			0.54		0.18
Uniform Delay, d1	22.8			5.4		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.8		0.1
Delay (s)	22.9			6.3		0.1
Level of Service	C			A		A
Approach Delay (s)	22.9			6.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	609	577	467	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1694	1845	3467	
Flt Permitted			0.39	1.00	1.00	
Satd. Flow (perm)			695	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	634	601	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	634	601	518	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			49.8	54.3	25.2	
Effective Green, g (s)			50.8	54.8	25.7	
Actuated g/C Ratio			0.74	0.79	0.37	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			875	1465	1291	
v/s Ratio Prot			c0.26	0.33	0.15	
v/s Ratio Perm			c0.27			
v/c Ratio			0.72	0.41	0.40	
Uniform Delay, d1			4.3	2.2	16.0	
Progression Factor			0.45	0.08	1.00	
Incremental Delay, d2			2.2	0.7	0.1	
Delay (s)			4.2	0.9	16.1	
Level of Service			A	A	B	
Approach Delay (s)	0.0			2.6	16.1	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	947	218	0	0	0	21	0	532	257	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.95				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2364				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2364				
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)	1018	234	0	0	0	23	0	572	276	0	0	0
RTOR Reduction (vph)	359	91	0	0	0	23	0	57	0	0	0	0
Lane Group Flow (vph)	262	540	0	0	0	0	0	791	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	15%	41%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	24.2	24.2				2.4		31.4				
Effective Green, g (s)	24.7	24.7				1.4		31.9				
Actuated g/C Ratio	0.35	0.35				0.02		0.46				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	571	587				26		1077				
v/s Ratio Prot								c0.33				
v/s Ratio Perm	0.16	0.33				c0.00						
v/c Ratio	0.46	0.92				0.02		0.73				
Uniform Delay, d1	17.5	21.7				33.6		15.6				
Progression Factor	1.26	0.33				1.00		1.00				
Incremental Delay, d2	1.4	13.8				0.1		2.6				
Delay (s)	23.4	21.0				33.7		18.2				
Level of Service	C	C				C		B				
Approach Delay (s)		22.2			33.7			18.2			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	21	0	0	272	18	95	1413	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1386			4786				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1264			1386			4786				
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)	17	22	0	0	286	19	100	1487	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	301	0	0	1593	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	38%	5%	38%	6%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.7			20.7			40.3				
Effective Green, g (s)		21.2			21.2			40.8				
Actuated g/C Ratio		0.30			0.30			0.58				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		383			420			2790				
v/s Ratio Prot					c0.22							
v/s Ratio Perm		0.03						0.33				
v/c Ratio		0.10			0.72			0.57				
Uniform Delay, d1		17.6			21.7			9.1				
Progression Factor		0.71			1.00			0.87				
Incremental Delay, d2		0.1			5.7			0.6				
Delay (s)		12.6			27.5			8.5				
Level of Service		B			C			A				
Approach Delay (s)		12.6			27.5			8.5			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	64	1465	96	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1712	1504		4522				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4522				
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)	95	152	0	0	86	120	67	1542	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	24	0	9	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	72	0	1701	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	6%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.3			17.3	17.3		44.2				
Effective Green, g (s)		17.8			17.8	17.8		44.2				
Actuated g/C Ratio		0.25			0.25	0.25		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		316			435	382		2855				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.38				
v/c Ratio		0.78			0.22	0.19		0.60				
Uniform Delay, d1		24.3			20.6	20.4		7.6				
Progression Factor		0.96			1.00	1.00		1.94				
Incremental Delay, d2		11.3			0.3	0.2		0.8				
Delay (s)		34.6			20.9	20.7		15.6				
Level of Service		C			C	C		B				
Approach Delay (s)		34.6			20.8			15.6			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
307: S "K" Street & W Heron Street #1012

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	76	31	0	0	71	32	28	1461	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1785			4381				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4381				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	87	36	0	0	82	37	32	1679	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	19	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	100	0	0	1760	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.5			11.5			50.0				
Effective Green, g (s)		12.0			12.0			50.0				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		227			306			3129				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.09						0.40				
v/c Ratio		0.54			0.33			0.56				
Uniform Delay, d1		26.5			25.5			4.8				
Progression Factor		1.61			1.00			0.26				
Incremental Delay, d2		2.6			0.6			0.6				
Delay (s)		45.1			26.1			1.8				
Level of Service		D			C			A				
Approach Delay (s)		45.1			26.1			1.8			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	233	25	0	0	32	18	54	1635	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4390				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4390				
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)	248	27	0	0	34	19	57	1739	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	275	0	0	42	0	0	1816	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.4			20.4			39.6				
Effective Green, g (s)		20.9			20.9			41.1				
Actuated g/C Ratio		0.30			0.30			0.59				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		315			423			2578				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.41				
v/c Ratio		0.87			0.10			0.70				
Uniform Delay, d1		23.3			17.7			10.2				
Progression Factor		0.67			1.00			0.59				
Incremental Delay, d2		22.1			0.1			1.4				
Delay (s)		37.7			17.8			7.4				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.8			7.4			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1607	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1374			4395				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1374			4395				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	60	17	0	0	8	11	25	1826	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	9	0	0	1868	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		151			183			3309				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.43				
v/c Ratio		0.51			0.05			0.56				
Uniform Delay, d1		28.2			26.5			3.7				
Progression Factor		0.82			1.00			0.26				
Incremental Delay, d2		2.6			0.1			0.5				
Delay (s)		25.9			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		25.9			26.6			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	56	37	34	35	0	0	0	0	17	1314	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4426	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1185						4426	
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)	0	62	41	38	39	0	0	0	0	19	1460	40
RTOR Reduction (vph)	0	35	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	68	0	0	77	0	0	0	0	0	1517	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.5			8.5						53.0	
Effective Green, g (s)		9.0			9.0						53.0	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		181			152						3351	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.06						0.34	
v/c Ratio		0.38			0.51						0.45	
Uniform Delay, d1		27.9			28.4						3.1	
Progression Factor		1.00			0.94						0.69	
Incremental Delay, d2		1.3			2.6						0.4	
Delay (s)		29.2			29.4						2.6	
Level of Service		C			C						A	
Approach Delay (s)		29.2			29.4			0.0			2.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	145	35	24	68	0	0	0	0	8	1173	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1451			1471						4404	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1451			1325						4404	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	158	38	26	74	0	0	0	0	9	1275	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	100	0	0	0	0	0	1361	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		13.9			13.9						46.1	
Effective Green, g (s)		14.4			14.4						47.6	
Actuated g/C Ratio		0.21			0.21						0.68	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		298			273						2995	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.08						0.31	
v/c Ratio		0.61			0.37						0.45	
Uniform Delay, d1		25.2			23.9						5.2	
Progression Factor		1.00			0.95						0.26	
Incremental Delay, d2		3.5			0.8						0.5	
Delay (s)		28.7			23.5						1.8	
Level of Service		C			C						A	
Approach Delay (s)		28.7			23.5			0.0			1.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1188	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1448			1471						4429	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1448			1339						4429	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	82	22	17	49	0	0	0	0	21	1291	27
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	87	0	0	66	0	0	0	0	0	1337	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.4			8.4						53.1	
Effective Green, g (s)		8.9			8.9						53.1	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		184			170						3360	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.30	
v/c Ratio		0.47			0.39						0.40	
Uniform Delay, d1		28.4			28.1						2.9	
Progression Factor		1.00			0.55						0.24	
Incremental Delay, d2		1.9			1.4						0.3	
Delay (s)		30.3			16.9						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.3			16.9			0.0			1.0	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
313: S "L" Street & W Wishkah Street #1011

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	104	15	57	84	0	0	0	0	131	1051	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						0.99	
Satd. Flow (prot)		1831			1826						4531	
Flt Permitted		1.00			0.85						0.99	
Satd. Flow (perm)		1831			1577						4531	
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)	0	109	16	60	88	0	0	0	0	138	1106	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	148	0	0	0	0	0	1273	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		536			462						2686	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.28	
v/c Ratio		0.22			0.32						0.47	
Uniform Delay, d1		18.7			19.3						8.1	
Progression Factor		1.00			0.98						0.86	
Incremental Delay, d2		0.9			1.7						0.6	
Delay (s)		19.6			20.6						7.5	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.6			0.0			7.5	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	142	213	0	0	0	0	21	349	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.92	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					1025						2476	1400
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					1025						2476	1400
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)	0	0	0	151	227	0	0	0	0	22	371	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	215	215
Lane Group Flow (vph)	0	0	0	0	378	0	0	0	0	0	585	192
Heavy Vehicles (%)	2%	2%	2%	88%	17%	2%	2%	2%	2%	0%	15%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					28.4						32.6	32.6
Effective Green, g (s)					28.9						33.1	33.1
Actuated g/C Ratio					0.41						0.47	0.47
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					423						1171	662
v/s Ratio Prot												
v/s Ratio Perm					0.37						0.24	0.14
v/c Ratio					0.89						0.50	0.29
Uniform Delay, d1					19.1						12.7	11.3
Progression Factor					0.99						0.21	0.19
Incremental Delay, d2					18.5						1.4	1.0
Delay (s)					37.4						4.0	3.1
Level of Service					D						A	A
Approach Delay (s)		0.0			37.4			0.0			3.7	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1109	72	0	0	0	0	0	0	19	452	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		0.99									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3000									2343	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3000									2343	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1275	83	0	0	0	0	0	0	22	520	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	1353	0	0	0	0	0	0	0	0	537	0
Heavy Vehicles (%)	0%	4%	58%	2%	2%	2%	2%	2%	2%	0%	32%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		37.6									23.4	
Effective Green, g (s)		38.1									23.9	
Actuated g/C Ratio		0.54									0.34	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1633									800	
v/s Ratio Prot		c0.45										
v/s Ratio Perm											0.23	
v/c Ratio		0.83									0.67	
Uniform Delay, d1		13.2									19.7	
Progression Factor		0.80									1.32	
Incremental Delay, d2		4.3									1.7	
Delay (s)		14.8									27.8	
Level of Service		B									C	
Approach Delay (s)		14.8			0.0			0.0			27.8	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1461	397	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1242			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1242			
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)	124	692	0	0	0	0	0	1538	418	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	804	0	0	0	0	0	1538	381	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	4%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		18.8						42.7	42.7			
Effective Green, g (s)		18.8						43.2	43.2			
Actuated g/C Ratio		0.27						0.62	0.62			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1229						1892	766			
v/s Ratio Prot								c0.50				
v/s Ratio Perm		0.18							0.31			
v/c Ratio		0.65						0.81	0.50			
Uniform Delay, d1		22.7						10.3	7.4			
Progression Factor		0.88						1.87	2.15			
Incremental Delay, d2		1.2						3.4	2.0			
Delay (s)		21.2						22.7	17.9			
Level of Service		C						C	B			
Approach Delay (s)		21.2			0.0			21.7			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	553	411	76	1407	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3254			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3254			2943				
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)	0	0	0	0	570	424	78	1451	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	976	0	0	1524	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					23.4			37.6				
Effective Green, g (s)					23.9			38.1				
Actuated g/C Ratio					0.34			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1111			1602				
v/s Ratio Prot					c0.30							
v/s Ratio Perm								0.52				
v/c Ratio					0.88			0.95				
Uniform Delay, d1					21.7			15.1				
Progression Factor					1.00			0.76				
Incremental Delay, d2					8.1			9.1				
Delay (s)					29.7			20.6				
Level of Service					C			C				
Approach Delay (s)		0.0			29.7			20.6			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1118	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2948									4361	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4361	
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)	0	290	45	0	0	0	0	0	0	394	1202	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	57	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1539	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.7									48.3	
Effective Green, g (s)		13.2									48.8	
Actuated g/C Ratio		0.19									0.70	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		556									3040	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.35	
v/c Ratio		0.56									0.51	
Uniform Delay, d1		25.8									5.0	
Progression Factor		1.00									0.65	
Incremental Delay, d2		1.3									0.5	
Delay (s)		27.1									3.8	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			3.8	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	324	296	0	0	0	0	0	1272	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.99						1.00	
Satd. Flow (prot)				1264	3277						4415	
Flt Permitted				0.95	0.99						1.00	
Satd. Flow (perm)				1264	3277						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	352	322	0	0	0	0	0	1383	68
RTOR Reduction (vph)	0	0	0	25	25	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	193	431	0	0	0	0	0	1445	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				16.8	16.8						44.2	
Effective Green, g (s)				17.3	17.3						44.7	
Actuated g/C Ratio				0.25	0.25						0.64	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				312	810						2819	
v/s Ratio Prot				c0.15	0.13						c0.33	
v/s Ratio Perm												
v/c Ratio				0.62	0.53						0.51	
Uniform Delay, d1				23.4	22.8						6.8	
Progression Factor				1.20	1.25						1.00	
Incremental Delay, d2				1.9	0.4						0.7	
Delay (s)				30.0	29.0						7.5	
Level of Service				C	C						A	
Approach Delay (s)		0.0			29.3			0.0			7.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
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)	11	1238	36	28	1027	2	349	8	18	17	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.98	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3311		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3125		1727	3311		1681	1672			1762	
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)	13	1456	42	33	1208	2	411	9	21	20	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1510	0	33	1210	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	9%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.3		5.4	80.7		17.3	17.3			5.0	
Effective Green, g (s)		72.3		5.4	81.7		18.3	18.3			6.0	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1915		79	2292		261	259			90	
v/s Ratio Prot				0.02	c0.37		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.53		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.8		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.56		1.00	1.00			1.00	
Incremental Delay, d2		3.4		2.8	0.7		22.4	19.9			1.7	
Delay (s)		20.5		59.5	5.6		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.5			7.0			69.6			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1575	102	53	1079	0	215	8	109	51	19	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3312		1727	3312		1665	1552			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3312		1727	3312		1665	1552			1751	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	1641	106	55	1124	0	224	8	114	53	20	25
RTOR Reduction (vph)	0	3	0	0	0	0	0	66	0	0	13	0
Lane Group Flow (vph)	26	1744	0	55	1124	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	9%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.3		7.6	66.3		14.5	14.5			11.6	
Effective Green, g (s)	6.6	66.3		7.6	67.3		15.5	15.5			12.6	
Actuated g/C Ratio	0.06	0.56		0.06	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1861		111	1889		219	204			187	
v/s Ratio Prot	0.02	c0.53		0.03	c0.34		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.27	0.94		0.50	0.60		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.9		53.3	16.5		49.9	47.6			49.5	
Progression Factor	0.78	0.60		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	8.6		2.5	1.4		21.0	2.2			2.1	
Delay (s)	42.3	22.9		55.9	17.9		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		23.2			19.6			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	913	3	516	853	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.93	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3260		3038	1517		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3260		3038	1517		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1127	4	637	1053	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1131	0	1153	537	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	13%	7%	7%	14%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	36.2		38.0	86.2		38.0
Effective Green, g (s)	38.2		40.0	86.2		40.0
Actuated g/C Ratio	0.44		0.46	1.00		0.46
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1445		1410	1517		1232
v/s Ratio Prot	c0.35		c0.38	0.35		0.14
v/s Ratio Perm						
v/c Ratio	0.78		0.82	0.35		0.31
Uniform Delay, d1	20.5		20.0	0.0		14.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	2.7		3.7	0.6		0.1
Delay (s)	23.2		23.7	0.6		14.5
Level of Service	C		C	A		B
Approach Delay (s)	23.2		16.4		14.5	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	86.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	20	0	0	8	19	635	1	3	340	55
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	21	0	0	8	20	668	1	3	358	58
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1117	1110	394	1096	1138	671	422			670		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1117	1110	394	1096	1138	671	422			670		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	178	205	655	182	197	459	1136			919		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	676	3	416
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	655	459	1136	1136	919	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.24
Queue Length 95th (ft)	2	1	1	1	0	0
Control Delay (s)	10.7	13.0	8.2	0.3	8.9	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.0	0.5		0.1	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	38.6%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
332: S M Street & W State Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	24	1	10	0	2	4	14	590	2	2	292	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	26	1	11	0	2	4	15	634	2	2	314	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1004	1001	330	995	1015	635	345			637		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1004	1001	330	995	1015	635	345			637		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	98	100	99	99	99			100		
cM capacity (veh/h)	216	240	714	218	236	480	1219			947		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	637	2	345
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	270	357	1219	1700	947	1700
Volume to Capacity	0.14	0.02	0.01	0.37	0.00	0.20
Queue Length 95th (ft)	12	1	1	0	0	0
Control Delay (s)	20.5	15.3	8.0	0.0	8.8	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	20.5	15.3	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	2	507	2	2	222	278
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	2	583	2	2	255	320
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1014	1009	415	852	1168	584	575			585		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1014	1009	415	852	1168	584	575			585		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	90	100	99	100	97	99	100			100		
cM capacity (veh/h)	211	241	642	267	185	495	1008			1000		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	585	2	575
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	320
cSH	232	257	1008	1700	1000	1700
Volume to Capacity	0.11	0.04	0.00	0.34	0.00	0.34
Queue Length 95th (ft)	9	3	0	0	0	0
Control Delay (s)	22.4	19.6	8.6	0.0	8.6	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	22.4	19.6	0.0		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	484	30	0	0	0	1	82	1	2	227	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	509	32	0	0	0	1	86	1	2	239	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			541			659	525	525	569	541	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			541			659	525	525	569	541	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	81	100	99	47	99
cM capacity (veh/h)	1604			1038			216	459	554	369	448	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	541	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	454	463
Volume to Capacity	0.00	0.00	0.19	0.55
Queue Length 95th (ft)	0	0	18	82
Control Delay (s)	0.0	0.0	14.8	22.0
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	14.8	22.0
Approach LOS			B	C

Intersection Summary			
Average Delay	7.8		
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	573	8	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	599	1	3	616	9	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1222	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1222	599
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		95	99
cM capacity (veh/h)			948		159	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	619	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	181
Volume to Capacity	0.35	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	26.1
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	26.1
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	550	0	2	598	10	0	1	0	8	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	598	0	2	650	11	0	1	0	9	2	8
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			601			1288	1284	603	1279	1279	657
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			601			1288	1284	603	1279	1279	657
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	94	99	98
cM capacity (veh/h)	912			959			136	164	500	138	161	457

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	663	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	912	959	164	198
Volume to Capacity	0.01	0.00	0.01	0.09
Queue Length 95th (ft)	1	0	1	8
Control Delay (s)	0.3	0.1	27.1	25.1
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	27.1	25.1
Approach LOS			D	D

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	553	1	1	593	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	601	1	1	645	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	646			602			1252	1252	602	1252	1252	645
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	646			602			1252	1252	602	1252	1252	645
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	99	100	100
cM capacity (veh/h)	925			961			148	172	500	148	172	472

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	603	647	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	925	961	229	226
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	20.9	21.1
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	20.9	21.1
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	468	34	186	468	11	76	2	164	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	514	37	204	514	12	84	2	180	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			552			1599	1571	535	1749	1584	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			552			1599	1571	535	1749	1584	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			70			0	97	67	43	98	94
cM capacity (veh/h)	1021			691			60	75	548	33	72	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	602	731	266	54
Volume Left	51	204	84	19
Volume Right	37	12	180	34
cSH	1021	691	151	83
Volume to Capacity	0.05	0.30	1.76	0.65
Queue Length 95th (ft)	4	31	487	76
Control Delay (s)	1.3	7.3	419.0	107.0
Lane LOS	A	A	F	F
Approach Delay (s)	1.3	7.3	419.0	107.0
Approach LOS			F	F

Intersection Summary			
Average Delay	74.6		
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	649	0	0	27	664
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	705	0	0	29	722
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			780	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			780	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			357	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	705	29	722
Volume Left	0	29	0
Volume Right	705	0	0
cSH	1700	1578	1700
Volume to Capacity	0.41	0.02	0.42
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	662	5	0	192	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	727	5	0	211	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1458	1458	1460	0
vC1, stage 1 conf vol			1458	1458	0	
vC2, stage 2 conf vol			0	0	1460	
vCu, unblocked vol	0		1458	1458	1460	0
tC, single (s)	4.2		7.1	7.3	6.5	6.2
tC, 2 stage (s)			6.1	6.3	5.5	
tF (s)	2.3		3.5	4.8	4.0	3.3
p0 queue free %	54		100	0	100	100
cM capacity (veh/h)	1597		80	47	95	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	485	248	211
Volume Left	485	242	0
Volume Right	0	5	0
cSH	1597	1597	47
Volume to Capacity	0.46	0.46	4.46
Queue Length 95th (ft)	61	61	Err
Control Delay (s)	9.1	9.0	Err
Lane LOS	A	A	F
Approach Delay (s)	9.1		Err
Approach LOS			F

Intersection Summary			
Average Delay	2242.0		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
356: N Monroe Street & W Heron Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	21	3	0	0	169	7	12	830	20	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	3	0	0	192	8	14	943	23	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	603	993	0	984	982	483	0			966		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	603	993	0	984	982	483	0			966		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	99	100	100	22	99	99			100		
cM capacity (veh/h)	136	245	1091	201	247	532	1600			709		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	485	494
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	144	253	1600	1700
Volume to Capacity	0.19	0.79	0.01	0.29
Queue Length 95th (ft)	17	149	1	0
Control Delay (s)	35.6	57.6	0.3	0.0
Lane LOS	E	F	A	
Approach Delay (s)	35.6	57.6	0.1	
Approach LOS	E	F		

Intersection Summary				
Average Delay		10.5		
Intersection Capacity Utilization		46.6%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
357: N Lincoln Street & W Heron Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	6	0	0	16	2	5	844	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	6	0	0	17	2	5	879	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	460	895	2	897	892	442	0			884		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460	895	2	897	892	442	0			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	94	100	100			100		
cM capacity (veh/h)	464	281	1086	233	282	569	1593			761		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	445	445
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	357	299	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.26
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	15.5	17.8	0.1	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.5	17.8	0.1	
Approach LOS	C	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	31	797	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	105	9	36	927	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	600	1013	4	1011	1009	471	3			938		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600	1013	4	1011	1009	471	3			938		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	94	97	100	100	49	98	98			100		
cM capacity (veh/h)	200	204	1019	162	205	492	1592			724		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	499	470
Volume Left	12	0	36	0
Volume Right	0	9	0	7
cSH	202	215	1592	1700
Volume to Capacity	0.09	0.53	0.02	0.28
Queue Length 95th (ft)	8	69	2	0
Control Delay (s)	24.7	39.2	0.7	0.0
Lane LOS	C	E	A	
Approach Delay (s)	24.7	39.2	0.4	
Approach LOS	C	E		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	34	0	0	0	0	3	509	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	4	100	40	0	0	0	0	4	606	10
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	641	628	311	328	633	7	618			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	363	348	0	13	353	7	338			7		
tC, single (s)	7.8	6.8	7.2	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.4	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	92	100	100			100		
cM capacity (veh/h)	446	483	931	852	501	1055	1087			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	140	307	312
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	535	709	1541	1700
Volume to Capacity	0.03	0.20	0.00	0.18
Queue Length 95th (ft)	3	18	0	0
Control Delay (s)	12.0	11.3	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	11.3	0.1	
Approach LOS	B	B		

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
360: N Lincoln Street & W Wishkah Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	570	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	613	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	650	642	315	340	648	4	626			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	642	315	340	648	4	626			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	347	392	687	575	389	1080	952			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	317	319
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	418	481	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.9	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.9	13.0	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		35.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	525	65	0	30	1	121	41	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	559	69	0	32	1	129	44	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	628			0			643	621	316	326	655	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628			0			643	621	316	326	655	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	77	89	100
cM capacity (veh/h)	950			1565			329	403	686	565	383	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	293	348	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	408	504
Volume to Capacity	0.01	0.20	0.08	0.34
Queue Length 95th (ft)	1	0	7	38
Control Delay (s)	0.4	0.0	14.6	15.8
Lane LOS	A		B	C
Approach Delay (s)	0.2		14.6	15.8
Approach LOS			B	C

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	176	0	176	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	191	0	191	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	240			29			165	174	145	261	261	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240			29			165	174	145	261	261	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	67	100	99	100	100
cM capacity (veh/h)	1326			1584			804	574	908	504	634	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	240	191	5
Volume Left	0	0	0	5
Volume Right	17	191	0	0
cSH	1326	1584	574	504
Volume to Capacity	0.00	0.00	0.33	0.01
Queue Length 95th (ft)	0	0	36	1
Control Delay (s)	0.0	0.0	14.4	12.2
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	14.4	12.2
Approach LOS			B	B

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	233	1	1	10	220	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	253	1	1	11	239	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	253	240	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	253	240	240			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	66	100	100			
cM capacity (veh/h)	740	799	1338			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	254	12	240
Volume Left	253	1	0
Volume Right	1	0	1
cSH	740	1338	1700
Volume to Capacity	0.34	0.00	0.14
Queue Length 95th (ft)	38	0	0
Control Delay (s)	12.4	0.7	0.0
Lane LOS	B	A	
Approach Delay (s)	12.4	0.7	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
371: Port Industrial Road & W 1st Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	507	6	16	3	5	5	0	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	39	452	5	5	583	7	18	3	6	6	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	583			456			1172	1124	454	1133	1130	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			456			1172	1124	454	1133	1130	586
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			87	98	99	96	100	90
cM capacity (veh/h)	949			1115			141	189	588	163	187	494

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	590	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	949	1700	1115	1700	174	406
Volume to Capacity	0.04	0.27	0.00	0.35	0.16	0.13
Queue Length 95th (ft)	3	0	0	0	14	11
Control Delay (s)	9.0	0.0	8.2	0.0	29.5	15.2
Lane LOS	A		A		D	C
Approach Delay (s)	0.7		0.1		29.5	15.2
Approach LOS					D	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	446	110	8	14	38	52	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	361	11	16	485	120	9	15	41	57	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	604			372			1013	1040	366	1029	986	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	604			372			1013	1040	366	1029	986	545
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			95	93	94	69	97	95
cM capacity (veh/h)	936			1144			186	212	653	184	240	541

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	621	65	92
Volume Left	18	16	9	57
Volume Right	11	120	41	29
cSH	936	1144	359	237
Volume to Capacity	0.02	0.01	0.18	0.39
Queue Length 95th (ft)	2	1	16	44
Control Delay (s)	0.6	0.4	17.2	29.5
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	17.2	29.5
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	288	2	4	0	339	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	324	2	4	0	381	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381			326			356	737	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			326			356	737	325	406	357	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	89	95	100	100	100
cM capacity (veh/h)	1151			596			591	340	716	481	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	381	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	381	33
cSH	1151	1700	596	1700	453
Volume to Capacity	0.01	0.19	0.01	0.22	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.2	0.0	11.1	0.0	14.4
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.1		14.4
Approach LOS					B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/12/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	39	0	2	0	0	0	31	50	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	0	2	0	0	0	36	59	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		112	94	0	170	93	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		112	94	0	170	93	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	95	100	95	100
cM capacity (veh/h)	1554			1620		809	767	1076	711	777	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	48	0	95	40
Volume Left	46	0	0	2
Volume Right	2	0	59	0
cSH	1554	1700	932	773
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	382	4	15	500	31	10	7	24	32	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1666			1767			1759	1538		1747	
Flt Permitted		0.98			0.99			0.81	1.00		0.80	
Satd. Flow (perm)		1643			1747			1461	1538		1446	
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)	12	411	4	16	538	33	11	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	22	0	12	0
Lane Group Flow (vph)	0	427	0	0	586	0	0	19	4	0	44	0
Heavy Vehicles (%)	7%	14%	7%	2%	7%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		26.2			26.2			5.7	5.7		5.7	
Effective Green, g (s)		26.7			26.7			6.2	6.2		6.2	
Actuated g/C Ratio		0.65			0.65			0.15	0.15		0.15	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1073			1140			221	233		219	
v/s Ratio Prot												
v/s Ratio Perm		0.26			c0.34			0.01	0.00		c0.03	
v/c Ratio		0.40			0.51			0.09	0.02		0.20	
Uniform Delay, d1		3.3			3.7			14.9	14.8		15.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.4			0.2	0.0		0.5	
Delay (s)		3.6			4.1			15.1	14.8		15.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.6			4.1			14.9			15.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	40.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	52	262	19	53
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	203	17	59	298	22	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			220		619	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					416	
vCu, unblocked vol			220		619	203
tC, single (s)			5.0		6.5	7.1
tC, 2 stage (s)					5.5	
tF (s)			3.0		3.6	4.1
p0 queue free %			94		96	91
cM capacity (veh/h)			955		560	656

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	59	298	82
Volume Left	0	0	59	0	22
Volume Right	0	17	0	0	60
cSH	1700	1700	955	1700	627
Volume to Capacity	0.12	0.01	0.06	0.18	0.13
Queue Length 95th (ft)	0	0	5	0	11
Control Delay (s)	0.0	0.0	9.0	0.0	11.6
Lane LOS			A		B
Approach Delay (s)	0.0		1.5		11.6
Approach LOS					B

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	1257	11	0	0	0	0	55	24	16	81	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3285						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3285						3240			3066	
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)	128	1352	12	0	0	0	0	59	26	17	87	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1492	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2576						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.45									c0.03	
v/c Ratio		0.58						0.19			0.33	
Uniform Delay, d1		3.0						28.8			29.3	
Progression Factor		1.00						1.00			0.57	
Incremental Delay, d2		1.0						0.3			0.6	
Delay (s)		3.9						29.1			17.4	
Level of Service		A						C			B	
Approach Delay (s)		3.9			0.0			29.1			17.4	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1230	64	0	0	0	0	80	121	77	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3275						1711			1621	
Flt Permitted		1.00						1.00			0.69	
Satd. Flow (perm)		3275						1711			1149	
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)	18	1447	75	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1536	0	0	0	0	0	214	0	0	187	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		33.8						15.1			15.1	
Effective Green, g (s)		33.8						15.1			15.1	
Actuated g/C Ratio		0.59						0.27			0.27	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1945						454			305	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.47									c0.16	
v/c Ratio		0.79						0.47			0.61	
Uniform Delay, d1		8.8						17.5			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.1						0.8			3.6	
Delay (s)		11.0						18.3			22.0	
Level of Service		B						B			C	
Approach Delay (s)		11.0			0.0			18.3			22.0	
Approach LOS		B			A			B			C	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1217	18	0	0	0	0	25	24	25	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3289						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3289						1597			1355	
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)	23	1255	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1296	0	0	0	0	0	29	0	0	55	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		32.0						4.5			4.5	
Effective Green, g (s)		32.5						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2349						175			149	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.39									c0.04	
v/c Ratio		0.55						0.16			0.37	
Uniform Delay, d1		3.1						18.4			18.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.3						0.4			1.5	
Delay (s)		3.3						18.8			20.3	
Level of Service		A						B			C	
Approach Delay (s)		3.3			0.0			18.8			20.3	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	45.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	1241	19	0	0	0	0	31	36	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	48	1279	20	0	0	0	0	32	37	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1299			1409	1386	649	790	1396	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1299			1409	1386	649	790	1396	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	77	91	78	66	100
cM capacity (veh/h)	1607			529			71	136	410	207	138	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	688	659	69	92
Volume Left	48	0	0	45
Volume Right	0	20	37	0
cSH	1607	1700	213	165
Volume to Capacity	0.03	0.39	0.32	0.55
Queue Length 95th (ft)	2	0	34	71
Control Delay (s)	0.8	0.0	29.9	50.9
Lane LOS	A		D	F
Approach Delay (s)	0.4		29.9	50.9
Approach LOS			D	F

Intersection Summary				
Average Delay		4.9		
Intersection Capacity Utilization		54.4%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	909	12	0	0	0	0	415	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3230						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3230						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	988	13	0	0	0	0	451	9	0	0	0
RTOR Reduction (vph)	52	1	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	56	1000	0	0	0	0	0	458	0	0	0	0
Heavy Vehicles (%)	3%	6%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	20.6	20.6						11.4				
Effective Green, g (s)	21.6	21.6						12.4				
Actuated g/C Ratio	0.51	0.51						0.30				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	901	1661						1032				
v/s Ratio Prot		c0.31						c0.13				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.60						0.44				
Uniform Delay, d1	5.1	7.2						12.0				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.6						0.3				
Delay (s)	5.1	7.8						12.3				
Level of Service	A	A						B				
Approach Delay (s)		7.5			0.0			12.3			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1126	70	0	0	0	0	27	171	41	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2840	1300					1575	1504		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.75	
Satd. Flow (perm)		2840	1300					1575	1504		1395	
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)	18	1211	75	0	0	0	0	29	184	44	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	40	40	0	0	0
Lane Group Flow (vph)	0	1229	66	0	0	0	0	68	65	0	78	0
Heavy Vehicles (%)	6%	8%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.1	53.1					7.9	7.9		7.9	
Effective Green, g (s)		53.6	53.6					8.4	8.4		8.4	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2175	995					189	180		167	
v/s Ratio Prot		c0.43						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.57	0.07					0.36	0.36		0.47	
Uniform Delay, d1		3.4	2.0					28.3	28.3		28.7	
Progression Factor		0.31	0.34					1.00	1.00		1.00	
Incremental Delay, d2		1.0	0.1					1.2	1.2		2.1	
Delay (s)		2.0	0.8					29.5	29.5		30.8	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.9			0.0			29.5			30.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1097	24	0	0	0	0	12	86	7	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2832						1314			1462	
Flt Permitted		1.00						1.00			0.87	
Satd. Flow (perm)		2832						1314			1297	
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)	24	1155	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	48	0	0	0	0
Lane Group Flow (vph)	0	1203	0	0	0	0	0	56	0	0	18	0
Heavy Vehicles (%)	6%	8%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.5						7.5			7.5	
Effective Green, g (s)		54.5						7.5			7.5	
Actuated g/C Ratio		0.78						0.11			0.11	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2205						141			139	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.42									0.01	
v/c Ratio		0.55						0.40			0.13	
Uniform Delay, d1		3.0						29.1			28.3	
Progression Factor		0.36						1.00			1.00	
Incremental Delay, d2		0.6						1.8			0.4	
Delay (s)		1.7						31.0			28.7	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			31.0			28.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	956	16	0	0	0	0	0	29	289	216	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2809							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2809							1289	1681	1405	
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)	0	1006	17	0	0	0	0	0	31	304	227	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	175	10	0
Lane Group Flow (vph)	0	1021	0	0	0	0	0	0	4	86	260	0
Heavy Vehicles (%)	2%	9%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		29.1							9.5	17.9	17.9	
Effective Green, g (s)		29.6							10.0	18.4	18.4	
Actuated g/C Ratio		0.42							0.14	0.26	0.26	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1188							184	442	369	
v/s Ratio Prot		c0.36							c0.00	0.05	c0.19	
v/s Ratio Perm												
v/c Ratio		0.86							0.02	0.20	0.71	
Uniform Delay, d1		18.3							25.8	20.0	23.3	
Progression Factor		1.10							1.00	1.00	1.00	
Incremental Delay, d2		7.5							0.2	1.0	10.8	
Delay (s)		27.6							26.0	21.0	34.2	
Level of Service		C							C	C	C	
Approach Delay (s)		27.6			0.0			26.0			27.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	433	12	0	0	0	0	45	25	460	47	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2733						1418		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2733						1418		1681	1360	
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)	7	461	13	0	0	0	0	48	27	489	50	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	479	0	0	0	0	0	51	0	269	270	0
Heavy Vehicles (%)	6%	12%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		19.9						6.9		29.7	29.7	
Effective Green, g (s)		20.4						7.4		30.2	30.2	
Actuated g/C Ratio		0.29						0.11		0.43	0.43	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		796						150		725	587	
v/s Ratio Prot								c0.04		0.16	c0.20	
v/s Ratio Perm		0.18										
v/c Ratio		0.60						0.34		0.37	0.46	
Uniform Delay, d1		21.3						29.0		13.5	14.1	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.3						1.3		1.5	2.6	
Delay (s)		22.6						30.4		14.9	16.7	
Level of Service		C						C		B	B	
Approach Delay (s)		22.6			0.0			30.4			15.8	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	359	0	567	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1678		2031		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1678		2031		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	399	0	630	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	399	0	630	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	11%	2%	6%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		30.5		30.5		
Effective Green, g (s)		30.5		30.5		
Actuated g/C Ratio		0.75		0.75		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1264		1530		
v/s Ratio Prot		0.24		c0.31		
v/s Ratio Perm						
v/c Ratio		0.32		0.41		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.2		
Delay (s)		1.8		2.0		
Level of Service		A		A		
Approach Delay (s)	1.8			2.0	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	40.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	944	22	18	163	0	0	90	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3395			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3395			3044			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	983	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	68	0
Lane Group Flow (vph)	0	0	0	0	1019	0	0	189	0	0	279	0
Heavy Vehicles (%)	2%	2%	2%	3%	6%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					48.8			12.2			12.2	
Effective Green, g (s)					49.3			12.7			12.7	
Actuated g/C Ratio					0.70			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2391			552			543	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.30			0.06				
v/c Ratio					0.43			0.34			0.51	
Uniform Delay, d1					4.4			25.0			25.9	
Progression Factor					1.13			1.03			1.00	
Incremental Delay, d2					0.5			0.3			0.8	
Delay (s)					5.4			26.2			26.7	
Level of Service					A			C			C	
Approach Delay (s)		0.0			5.4			26.2			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1246	19	13	381	0	0	51	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
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3290			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3290			1679			1710	1615
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)	0	0	0	15	1326	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	44
Lane Group Flow (vph)	0	0	0	0	1359	0	0	419	0	0	54	246
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2021			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.41			c0.25				0.15
v/c Ratio					0.67			0.92			0.12	0.56
Uniform Delay, d1					8.9			24.8			19.2	21.9
Progression Factor					0.69			1.00			1.00	1.00
Incremental Delay, d2					1.7			26.1			0.5	5.1
Delay (s)					7.9			50.8			19.7	27.0
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.9			50.8			25.9	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1170	92	32	68	0	0	211	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3500	1554		1815			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3500	1554		1550			1794	
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)	0	0	0	46	1232	97	34	72	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1278	55	0	106	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	3%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					30.6	30.6		15.0			15.0	
Effective Green, g (s)					30.6	30.6		15.0			15.0	
Actuated g/C Ratio					0.57	0.57		0.28			0.28	
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)					1998	887		434			502	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.37	0.04		0.07				
v/c Ratio					0.64	0.06		0.24			0.60	
Uniform Delay, d1					7.8	5.1		14.9			16.7	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.7	0.0		0.3			1.9	
Delay (s)					8.5	5.1		15.2			18.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.2			15.2			18.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1330	5	18	7	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.96			1.00	
Satd. Flow (prot)					3262			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3262			1676			1777	
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)	0	0	0	35	1415	5	19	7	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1455	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	5%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.9			1.3			1.3	
Effective Green, g (s)					30.4			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2467			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.45			c0.02				
v/c Ratio					0.59			0.35			0.29	
Uniform Delay, d1					2.2			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.4			2.8			2.0	
Delay (s)					2.5			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.5			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	42	1221	12	52	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	46	1342	13	57	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1355			0			785	1447	0	1448	1441	677
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1355			0			785	1447	0	1448	1441	677
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			76	89	100	100	85	97
cM capacity (veh/h)	504			1622			237	127	1084	84	130	400

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	717	684	71	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	202	175
Volume to Capacity	0.03	0.40	0.35	0.18
Queue Length 95th (ft)	2	0	38	16
Control Delay (s)	0.8	0.0	32.3	30.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		32.3	30.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1209	2	471	23	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3297		1618	1630				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3297		1618	1630				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1358	2	529	26	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	156	156	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1360	0	119	124	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.3		10.1	10.1				0.7
Effective Green, g (s)					29.3		11.1	11.1				1.7
Actuated g/C Ratio					0.54		0.21	0.21				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1786		332	334				51
v/s Ratio Prot					c0.41							
v/s Ratio Perm							0.07	0.08				c0.00
v/c Ratio					0.76		0.36	0.37				0.00
Uniform Delay, d1					9.7		18.4	18.5				25.4
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					2.0		0.7	0.7				0.0
Delay (s)					11.6		19.1	19.2				25.4
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.6			19.2			25.4	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1272	184	0	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1339	194	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1339				1339	669
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1339				1339	669
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	77
cM capacity (veh/h)	511				142	395

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	669	669	194	89
Volume Left	0	0	0	0
Volume Right	0	0	194	89
cSH	1700	1700	1700	395
Volume to Capacity	0.39	0.39	0.11	0.23
Queue Length 95th (ft)	0	0	0	21
Control Delay (s)	0.0	0.0	0.0	16.8
Lane LOS				C
Approach Delay (s)	0.0			16.8
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	474	1116	0	0	8	98	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	489	1151	0	0	8	101	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			489	489	489	1639	1639	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			489	489	489	1639	1639	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	0	100	
cM capacity (veh/h)			480	579	490	100	395	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	872	767	8	101
Volume Left	0	0	8	0
Volume Right	384	767	0	0
cSH	1700	1700	490	100
Volume to Capacity	0.51	0.45	0.02	1.01
Queue Length 95th (ft)	0	0	1	155
Control Delay (s)	0.0	0.0	12.5	170.1
Lane LOS			B	F
Approach Delay (s)	0.0		158.2	
Approach LOS			F	

Intersection Summary			
Average Delay	9.9		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	52	0	0	1236	0	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3438		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3438		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	0	0	1343	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	0	0	1343	0	508
Heavy Vehicles (%)	2%	2%	3%	5%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.4			48.1		70.5
Effective Green, g (s)	13.9			48.6		70.5
Actuated g/C Ratio	0.20			0.69		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	349			2370		2787
v/s Ratio Prot	0.03			c0.39		
v/s Ratio Perm						c0.18
v/c Ratio	0.16			0.57		0.18
Uniform Delay, d1	23.5			5.6		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	23.6			6.5		0.1
Level of Service	C			A		A
Approach Delay (s)	23.6			6.5	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	4.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	659	577	467	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1631	1845	3467	
Flt Permitted			0.38	1.00	1.00	
Satd. Flow (perm)			658	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	686	601	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	686	601	518	0
Heavy Vehicles (%)	2%	2%	7%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			51.2	55.7	25.0	
Effective Green, g (s)			52.2	56.2	25.5	
Actuated g/C Ratio			0.74	0.80	0.36	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			856	1471	1254	
v/s Ratio Prot			c0.30	0.33	0.15	
v/s Ratio Perm			c0.29			
v/c Ratio			0.80	0.41	0.41	
Uniform Delay, d1			5.5	2.2	16.9	
Progression Factor			0.63	0.08	1.00	
Incremental Delay, d2			4.5	0.7	0.1	
Delay (s)			7.9	0.8	17.0	
Level of Service			A	A	B	
Approach Delay (s)	0.0			4.6	17.0	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	18.3
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	966	222	0	0	0	22	0	566	152	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.97				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2704				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2704				
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)	1039	239	0	0	0	24	0	609	163	0	0	0
RTOR Reduction (vph)	344	88	0	0	0	23	0	25	0	0	0	0
Lane Group Flow (vph)	290	556	0	0	0	1	0	747	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	8%	17%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	25.7	25.7				2.5		29.8				
Effective Green, g (s)	26.2	26.2				1.5		30.3				
Actuated g/C Ratio	0.37	0.37				0.02		0.43				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	606	622				27		1170				
v/s Ratio Prot								c0.28				
v/s Ratio Perm	0.18	0.33				c0.00						
v/c Ratio	0.48	0.89				0.02		0.64				
Uniform Delay, d1	16.7	20.6				33.5		15.6				
Progression Factor	1.33	0.37				1.00		1.00				
Incremental Delay, d2	1.7	12.4				0.1		1.2				
Delay (s)	23.9	20.0				33.6		16.7				
Level of Service	C	C				C		B				
Approach Delay (s)		21.9			33.6			16.7			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	22	0	0	169	18	53	1508	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1644			4933				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1271			1644			4933				
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)	17	23	0	0	178	19	56	1587	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	40	0	0	191	0	0	1649	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	15%	5%	3%	5%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		13.6			13.6			47.4				
Effective Green, g (s)		14.1			14.1			47.9				
Actuated g/C Ratio		0.20			0.20			0.68				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		256			331			3376				
v/s Ratio Prot					c0.12							
v/s Ratio Perm		0.03						0.33				
v/c Ratio		0.16			0.58			0.49				
Uniform Delay, d1		23.0			25.3			5.2				
Progression Factor		1.06			1.00			0.91				
Incremental Delay, d2		0.3			2.4			0.4				
Delay (s)		24.7			27.7			5.1				
Level of Service		C			C			A				
Approach Delay (s)		24.7			27.7			5.1			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	92	147	0	0	91	116	72	1548	105	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1722	1504		4522				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1236			1722	1504		4522				
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)	97	155	0	0	96	122	76	1629	111	0	0	0
RTOR Reduction (vph)	0	0	0	0	12	19	0	9	0	0	0	0
Lane Group Flow (vph)	0	252	0	0	105	82	0	1807	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	6%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.5			17.5	17.5		44.0				
Effective Green, g (s)		18.0			18.0	18.0		44.0				
Actuated g/C Ratio		0.26			0.26	0.26		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		318			443	387		2842				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.40				
v/c Ratio		0.79			0.24	0.21		0.64				
Uniform Delay, d1		24.3			20.6	20.4		8.0				
Progression Factor		0.95			1.00	1.00		2.12				
Incremental Delay, d2		12.0			0.3	0.3		1.0				
Delay (s)		35.0			20.8	20.7		18.1				
Level of Service		C			C	C		B				
Approach Delay (s)		35.0			20.8			18.1			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	78	31	0	0	73	32	28	1543	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1786			4382				
Flt Permitted		0.70			1.00			1.00				
Satd. Flow (perm)		1310			1786			4382				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	90	36	0	0	84	37	32	1774	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	126	0	0	106	0	0	1855	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.7			11.7			49.8				
Effective Green, g (s)		12.2			12.2			49.8				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		228			311			3117				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.10						0.42				
v/c Ratio		0.55			0.34			0.60				
Uniform Delay, d1		26.4			25.4			5.1				
Progression Factor		1.61			1.00			0.25				
Incremental Delay, d2		2.8			0.7			0.7				
Delay (s)		45.3			26.0			1.9				
Level of Service		D			C			A				
Approach Delay (s)		45.3			26.0			1.9			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	238	26	0	0	32	18	62	1714	22	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4391				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1057			1418			4391				
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)	253	28	0	0	34	19	66	1823	23	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	281	0	0	44	0	0	1910	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.7			20.7			39.3				
Effective Green, g (s)		21.2			21.2			40.8				
Actuated g/C Ratio		0.30			0.30			0.58				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		320			429			2559				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.27						0.44				
v/c Ratio		0.88			0.10			0.75				
Uniform Delay, d1		23.2			17.6			10.8				
Progression Factor		0.68			1.00			0.62				
Incremental Delay, d2		22.3			0.1			1.7				
Delay (s)		38.0			17.7			8.4				
Level of Service		D			B			A				
Approach Delay (s)		38.0			17.7			8.4			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	54	15	0	0	8	10	23	1685	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.93			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1380			4395				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1132			1380			4395				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	61	17	0	0	9	11	26	1915	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	78	0	0	10	0	0	1958	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		150			183			3309				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.45				
v/c Ratio		0.52			0.06			0.59				
Uniform Delay, d1		28.3			26.5			3.9				
Progression Factor		0.82			1.00			0.25				
Incremental Delay, d2		3.1			0.1			0.5				
Delay (s)		26.3			26.7			1.5				
Level of Service		C			C			A				
Approach Delay (s)		26.3			26.7			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	57	38	35	36	0	0	0	0	17	1391	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4426	
Flt Permitted		1.00			0.79						1.00	
Satd. Flow (perm)		1410			1184						4426	
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)	0	63	42	39	40	0	0	0	0	19	1546	41
RTOR Reduction (vph)	0	28	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	77	0	0	79	0	0	0	0	0	1604	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.9	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		183			154						3345	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.07						0.36	
v/c Ratio		0.42			0.51						0.48	
Uniform Delay, d1		28.0			28.4						3.3	
Progression Factor		1.00			0.96						0.68	
Incremental Delay, d2		1.6			2.8						0.5	
Delay (s)		29.6			30.1						2.7	
Level of Service		C			C						A	
Approach Delay (s)		29.6			30.1			0.0			2.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	148	44	25	76	0	0	0	0	9	1247	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1444			1472						4405	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1444			1329						4405	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	161	48	27	83	0	0	0	0	10	1355	86
RTOR Reduction (vph)	0	18	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	191	0	0	110	0	0	0	0	0	1444	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		14.4			14.4						45.6	
Effective Green, g (s)		14.9			14.9						47.1	
Actuated g/C Ratio		0.21			0.21						0.67	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		307			283						2964	
v/s Ratio Prot		c0.13										
v/s Ratio Perm					0.08						0.33	
v/c Ratio		0.62			0.39						0.49	
Uniform Delay, d1		25.0			23.6						5.6	
Progression Factor		1.00			0.94						0.27	
Incremental Delay, d2		3.9			0.8						0.5	
Delay (s)		28.9			23.0						2.0	
Level of Service		C			C						A	
Approach Delay (s)		28.9			23.0			0.0			2.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	77	21	16	45	0	0	0	0	19	1270	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1447			1471						4430	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1447			1340						4430	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	84	23	17	49	0	0	0	0	21	1380	28
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	90	0	0	66	0	0	0	0	0	1427	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.9	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		188			174						3348	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.32	
v/c Ratio		0.48			0.38						0.43	
Uniform Delay, d1		28.2			27.9						3.1	
Progression Factor		1.00			0.51						0.23	
Incremental Delay, d2		1.9			1.3						0.4	
Delay (s)		30.1			15.7						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.1			15.7			0.0			1.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	106	23	66	93	0	0	0	0	133	1131	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						0.99	
Satd. Flow (prot)		1822			1825						4570	
Flt Permitted		1.00			0.83						0.99	
Satd. Flow (perm)		1822			1553						4570	
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)	0	112	24	69	98	0	0	0	0	140	1191	33
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	125	0	0	167	0	0	0	0	0	1360	0
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		534			455						2709	
v/s Ratio Prot		0.07										
v/s Ratio Perm					c0.11						0.30	
v/c Ratio		0.23			0.37						0.50	
Uniform Delay, d1		18.8			19.6						8.3	
Progression Factor		1.00			0.97						0.83	
Incremental Delay, d2		1.0			2.1						0.6	
Delay (s)		19.8			21.2						7.5	
Level of Service		B			C						A	
Approach Delay (s)		19.8			21.2			0.0			7.5	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	36	173	0	0	0	0	22	430	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.93	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1347						2531	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1347						2531	1400
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)	0	0	0	38	184	0	0	0	0	23	457	830
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	144	152
Lane Group Flow (vph)	0	0	0	0	222	0	0	0	0	0	751	263
Heavy Vehicles (%)	2%	2%	2%	50%	4%	2%	2%	2%	2%	0%	11%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					17.1						43.9	43.9
Effective Green, g (s)					17.6						44.4	44.4
Actuated g/C Ratio					0.25						0.63	0.63
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					339						1605	888
v/s Ratio Prot												
v/s Ratio Perm					0.16						0.30	0.19
v/c Ratio					0.65						0.47	0.30
Uniform Delay, d1					23.5						6.7	5.8
Progression Factor					0.83						0.52	0.19
Incremental Delay, d2					4.3						0.9	0.8
Delay (s)					23.9						4.3	1.9
Level of Service					C						A	A
Approach Delay (s)		0.0			23.9			0.0			3.6	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1131	31	0	0	0	0	0	0	19	425	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3109									2655	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3109									2655	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1300	36	0	0	0	0	0	0	22	489	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	1334	0	0	0	0	0	0	0	0	505	0
Heavy Vehicles (%)	0%	4%	7%	2%	2%	2%	2%	2%	2%	0%	16%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		39.1									21.9	
Effective Green, g (s)		39.6									22.4	
Actuated g/C Ratio		0.57									0.32	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1759									850	
v/s Ratio Prot		c0.43										
v/s Ratio Perm											0.19	
v/c Ratio		0.76									0.59	
Uniform Delay, d1		11.6									20.0	
Progression Factor		0.78									1.43	
Incremental Delay, d2		2.7									1.0	
Delay (s)		11.7									29.6	
Level of Service		B									C	
Approach Delay (s)		11.7			0.0			0.0			29.6	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	120	670	0	0	0	0	0	1522	419	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1242			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1242			
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)	126	705	0	0	0	0	0	1602	441	0	0	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	36	0	0	0
Lane Group Flow (vph)	0	821	0	0	0	0	0	1602	405	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	4%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		19.4						42.1	42.1			
Effective Green, g (s)		19.4						42.6	42.6			
Actuated g/C Ratio		0.28						0.61	0.61			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1268						1865	756			
v/s Ratio Prot								c0.52				
v/s Ratio Perm		0.18							0.33			
v/c Ratio		0.65						0.86	0.54			
Uniform Delay, d1		22.3						11.2	8.0			
Progression Factor		0.89						1.81	2.02			
Incremental Delay, d2		1.1						4.6	2.3			
Delay (s)		20.8						25.0	18.4			
Level of Service		C						C	B			
Approach Delay (s)		20.8			0.0			23.6			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	579	419	81	1464	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3258			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3258			2943				
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)	0	0	0	0	597	432	84	1509	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1013	0	0	1587	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					23.7			37.3				
Effective Green, g (s)					24.2			37.8				
Actuated g/C Ratio					0.35			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1126			1589				
v/s Ratio Prot					c0.31							
v/s Ratio Perm								0.54				
v/c Ratio					0.90			1.00				
Uniform Delay, d1					21.7			16.1				
Progression Factor					1.00			0.79				
Incremental Delay, d2					9.7			16.2				
Delay (s)					31.5			29.0				
Level of Service					C			C				
Approach Delay (s)		0.0			31.5			29.0			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	275	46	0	0	0	0	0	0	373	1188	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2944									4394	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2944									4394	
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)	0	296	49	0	0	0	0	0	0	401	1277	0
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	0	0	55	0
Lane Group Flow (vph)	0	322	0	0	0	0	0	0	0	0	1623	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.9									48.1	
Effective Green, g (s)		13.4									48.6	
Actuated g/C Ratio		0.19									0.69	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		564									3051	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.37	
v/c Ratio		0.57									0.53	
Uniform Delay, d1		25.7									5.2	
Progression Factor		1.00									0.63	
Incremental Delay, d2		1.4									0.6	
Delay (s)		27.1									3.9	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			3.9	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	345	305	0	0	0	0	0	1330	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.98						1.00	
Satd. Flow (prot)				1264	3275						4415	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1264	3275						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	375	332	0	0	0	0	0	1446	70
RTOR Reduction (vph)	0	0	0	21	21	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	208	457	0	0	0	0	0	1510	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				17.5	17.5						43.5	
Effective Green, g (s)				18.0	18.0						44.0	
Actuated g/C Ratio				0.26	0.26						0.63	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				325	842						2775	
v/s Ratio Prot				c0.16	0.14						c0.34	
v/s Ratio Perm												
v/c Ratio				0.64	0.54						0.54	
Uniform Delay, d1				23.1	22.4						7.3	
Progression Factor				1.15	1.21						1.00	
Incremental Delay, d2				2.0	0.3						0.8	
Delay (s)				28.6	27.5						8.1	
Level of Service				C	C						A	
Approach Delay (s)		0.0			27.9			0.0			8.1	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
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)	15	1289	37	28	1076	2	356	9	18	17	4	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.96	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3342		1681	1673			1743	
Flt Permitted		0.93		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3088		1727	3342		1681	1673			1743	
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)	18	1516	44	33	1266	2	419	11	21	20	5	11
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	10	0
Lane Group Flow (vph)	0	1577	0	33	1268	0	226	222	0	0	26	0
Heavy Vehicles (%)	2%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	1%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.1		5.4	80.5		17.4	17.4			5.1	
Effective Green, g (s)		72.1		5.4	81.5		18.4	18.4			6.1	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1887		79	2308		262	261			90	
v/s Ratio Prot				0.02	c0.38		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.51										
v/c Ratio		0.84		0.42	0.55		0.86	0.85			0.28	
Uniform Delay, d1		18.2		54.8	9.1		48.6	48.4			53.8	
Progression Factor		1.00		1.03	0.58		1.00	1.00			1.00	
Incremental Delay, d2		4.6		2.8	0.7		24.1	21.8			1.7	
Delay (s)		22.8		59.1	6.1		72.7	70.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		22.8			7.4			71.5			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	1632	104	54	1129	0	220	9	111	52	19	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3313		1727	3343		1665	1553			1750	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3313		1727	3343		1665	1553			1750	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	27	1700	108	56	1176	0	229	9	116	54	20	26
RTOR Reduction (vph)	0	3	0	0	0	0	0	64	0	0	12	0
Lane Group Flow (vph)	27	1805	0	56	1176	0	183	107	0	0	88	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.0		7.7	66.1		14.6	14.6			11.7	
Effective Green, g (s)	6.6	66.0		7.7	67.1		15.6	15.6			12.7	
Actuated g/C Ratio	0.06	0.56		0.07	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1853		113	1901		220	205			188	
v/s Ratio Prot	0.02	c0.54		0.03	c0.35		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.28	0.97		0.50	0.62		0.83	0.52			0.47	
Uniform Delay, d1	53.4	25.2		53.3	16.9		49.9	47.7			49.5	
Progression Factor	0.80	0.63		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	12.8		2.5	1.5		23.2	2.7			2.1	
Delay (s)	43.5	28.7		55.8	18.5		73.1	50.4			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		28.9			20.2			62.1			51.6	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM Average Control Delay	29.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	823	3	533	760	0	319
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.94	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3442		3145	1616		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3442		3145	1616		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1016	4	658	938	0	394
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1020	0	1089	507	0	394
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	29.8		33.1	74.9		33.1
Effective Green, g (s)	31.8		35.1	74.9		35.1
Actuated g/C Ratio	0.42		0.47	1.00		0.47
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1461		1474	1616		1245
v/s Ratio Prot	c0.30		c0.35	0.31		0.15
v/s Ratio Perm						
v/c Ratio	0.70		0.74	0.31		0.32
Uniform Delay, d1	17.6		16.2	0.0		12.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	1.4		1.9	0.5		0.1
Delay (s)	19.0		18.0	0.5		12.5
Level of Service	B		B	A		B
Approach Delay (s)	19.0		12.5		12.5	
Approach LOS	B		B		B	

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	74.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	21	0	0	9	19	647	1	3	346	56
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	22	0	0	9	20	681	1	3	364	59
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1138	1129	401	1116	1158	684	429			683		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1138	1129	401	1116	1158	684	429			683		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	172	200	649	176	192	452	1129			909		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	22	9	13	689	3	423
Volume Left	0	0	13	7	3	0
Volume Right	22	9	0	1	0	59
cSH	649	452	1129	1129	909	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.25
Queue Length 95th (ft)	3	2	1	1	0	0
Control Delay (s)	10.7	13.1	8.2	0.3	9.0	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.1	0.5		0.1	
Approach LOS	B	B				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
332: S M Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	25	1	10	0	2	4	14	602	2	2	298	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	27	1	11	0	2	4	15	647	2	2	320	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1023	1020	336	1015	1034	648	352			649		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1023	1020	336	1015	1034	648	352			649		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	100	98	100	99	99	99			100		
cM capacity (veh/h)	209	234	708	211	230	472	1213			937		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	39	6	15	649	2	352
Volume Left	27	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	261	349	1213	1700	937	1700
Volume to Capacity	0.15	0.02	0.01	0.38	0.00	0.21
Queue Length 95th (ft)	13	1	1	0	0	0
Control Delay (s)	21.2	15.5	8.0	0.0	8.9	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	21.2	15.5	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	10	400	2	2	226	168
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	11	460	2	2	260	193
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	851	846	356	752	941	461	453			462		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	851	846	356	752	941	461	453			462		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	92	100	100	100	98	99	99			100		
cM capacity (veh/h)	273	298	692	311	251	582	1118			1110		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	11	462	2	453
Volume Left	22	0	11	0	2	0
Volume Right	3	5	0	2	0	193
cSH	297	336	1118	1700	1110	1700
Volume to Capacity	0.09	0.03	0.01	0.27	0.00	0.27
Queue Length 95th (ft)	7	2	1	0	0	0
Control Delay (s)	18.2	16.1	8.3	0.0	8.3	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	18.2	16.1	0.2		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	36.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	378	37	0	0	0	1	91	1	2	232	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	398	39	0	0	0	1	96	1	2	244	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			437			554	417	417	466	437	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			437			554	417	417	466	437	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	82	100	100	52	99
cM capacity (veh/h)	1604			1134			275	528	638	435	513	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	437	0	98	261
Volume Left	0	0	1	2
Volume Right	39	0	1	15
cSH	1604	1700	524	528
Volume to Capacity	0.00	0.00	0.19	0.49
Queue Length 95th (ft)	0	0	17	68
Control Delay (s)	0.0	0.0	13.4	18.3
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.4	18.3
Approach LOS			B	C

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	613	1	3	626	9	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	659	1	3	673	10	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			660		1339	660
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			660		1339	660
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		93	99
cM capacity (veh/h)			900		133	389

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	660	676	12
Volume Left	0	3	10
Volume Right	1	0	2
cSH	1700	900	151
Volume to Capacity	0.39	0.00	0.08
Queue Length 95th (ft)	0	0	6
Control Delay (s)	0.0	0.1	30.8
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	30.8
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	606	0	2	652	10	0	1	0	9	2	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	659	0	2	709	11	0	1	0	10	2	9
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	721			662			1411	1406	664	1400	1401	716
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	721			662			1411	1406	664	1400	1401	716
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	91	98	98
cM capacity (veh/h)	867			910			111	138	462	113	135	423

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	668	722	1	21
Volume Left	10	2	0	10
Volume Right	0	11	0	9
cSH	867	910	138	167
Volume to Capacity	0.01	0.00	0.01	0.12
Queue Length 95th (ft)	1	0	1	10
Control Delay (s)	0.3	0.1	31.3	29.5
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	31.3	29.5
Approach LOS			D	D

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	609	1	1	647	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	662	1	1	703	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	704			663			1372	1371	662	1372	1371	704
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	704			663			1372	1371	662	1372	1371	704
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	99	100	100
cM capacity (veh/h)	880			912			123	146	462	123	146	437

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	664	705	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	880	912	194	192
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	23.8	24.0
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	23.8	24.0
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	477	80	118	477	11	119	2	265	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	52	524	88	130	524	12	131	2	291	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	538			612			1497	1469	570	1757	1507	533
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	538			612			1497	1469	570	1757	1507	533
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			87			0	98	44	25	99	94
cM capacity (veh/h)	1013			962			82	105	524	25	99	545

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	664	666	424	54
Volume Left	52	130	131	19
Volume Right	88	12	291	34
cSH	1013	962	195	65
Volume to Capacity	0.05	0.13	2.18	0.83
Queue Length 95th (ft)	4	12	836	96
Control Delay (s)	1.3	3.3	586.7	169.6
Lane LOS	A	A	F	F
Approach Delay (s)	1.3	3.3	586.7	169.6
Approach LOS			F	F

Intersection Summary			
Average Delay	144.4		
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	760	0	0	27	606
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	826	0	0	29	659
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			717	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			717	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			389	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	826	29	659
Volume Left	0	29	0
Volume Right	826	0	0
cSH	1700	1578	1700
Volume to Capacity	0.49	0.02	0.39
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	773	5	0	19	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	849	5	0	21	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1702	1702	1704	0
vC1, stage 1 conf vol			1702	1702	0	
vC2, stage 2 conf vol			0	0	1704	
vCu, unblocked vol	0		1702	1702	1704	0
tC, single (s)	4.1		7.1	6.7	6.5	6.2
tC, 2 stage (s)			6.1	5.7	5.5	
tF (s)	2.2		3.5	4.1	4.0	3.3
p0 queue free %	47		100	48	100	100
cM capacity (veh/h)	1604		50	40	62	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	566	289	21
Volume Left	566	283	0
Volume Right	0	5	0
cSH	1604	1604	40
Volume to Capacity	0.53	0.53	0.52
Queue Length 95th (ft)	82	82	46
Control Delay (s)	9.7	9.7	168.3
Lane LOS	A	A	F
Approach Delay (s)	9.7		168.3
Approach LOS			F

Intersection Summary			
Average Delay	13.5		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	22	3	0	0	172	8	12	768	21	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	25	3	0	0	195	9	14	873	24	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	570	924	0	914	912	448	0			897		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570	924	0	914	912	448	0			897		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	99	100	100	28	98	99			100		
cM capacity (veh/h)	166	269	1091	226	272	561	1600			753		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	28	205	450	460
Volume Left	25	0	14	0
Volume Right	0	9	0	24
cSH	174	278	1600	1700
Volume to Capacity	0.16	0.74	0.01	0.27
Queue Length 95th (ft)	14	132	1	0
Control Delay (s)	29.7	46.9	0.3	0.0
Lane LOS	D	E	A	
Approach Delay (s)	29.7	46.9	0.1	
Approach LOS	D	E		

Intersection Summary				
Average Delay		9.2		
Intersection Capacity Utilization		45.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
357: N Lincoln Street & W Heron Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	8	6	0	0	16	2	5	782	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	8	6	0	0	17	2	5	815	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	428	830	2	833	828	410	0			820		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	428	830	2	833	828	410	0			820		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	95	100	100			100		
cM capacity (veh/h)	491	307	1086	260	308	597	1593			805		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	15	19	412	412
Volume Left	8	0	5	0
Volume Right	0	2	0	5
cSH	391	325	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.24
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	14.6	16.7	0.1	0.0
Lane LOS	B	C	A	
Approach Delay (s)	14.6	16.7	0.1	
Approach LOS	B	C		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	92	9	38	727	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	107	10	44	845	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	578	948	4	946	944	430	3			856		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	578	948	4	946	944	430	3			856		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	95	97	100	100	52	98	97			100		
cM capacity (veh/h)	217	223	1019	181	224	524	1599			777		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	117	467	430
Volume Left	12	0	44	0
Volume Right	0	10	0	7
cSH	219	236	1599	1700
Volume to Capacity	0.09	0.50	0.03	0.25
Queue Length 95th (ft)	7	63	2	0
Control Delay (s)	23.0	34.5	0.9	0.0
Lane LOS	C	D	A	
Approach Delay (s)	23.0	34.5	0.5	
Approach LOS	C	D		

Intersection Summary				
Average Delay	4.8			
Intersection Capacity Utilization	39.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	11	86	42	0	0	0	0	3	441	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	13	102	50	0	0	0	0	4	525	11
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.90	0.90	0.90	0.90	0.90		0.90					
vC, conflicting volume	566	548	271	297	553	7	539			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	280	260	0	0	266	7	250			7		
tC, single (s)	7.8	6.8	7.0	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.3	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	99	88	91	100	100			100		
cM capacity (veh/h)	510	544	963	864	564	1055	1172			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	27	152	266	273
Volume Left	0	102	4	0
Volume Right	13	0	0	11
cSH	687	735	1541	1700
Volume to Capacity	0.04	0.21	0.00	0.16
Queue Length 95th (ft)	3	19	0	0
Control Delay (s)	10.5	11.2	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	10.5	11.2	0.1	
Approach LOS	B	B		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	510	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	548	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	585	577	283	307	584	4	561			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	585	577	283	307	584	4	561			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	386	427	720	607	423	1080	1006			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	285	287
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	453	516	1576	1700
Volume to Capacity	0.03	0.06	0.01	0.17
Queue Length 95th (ft)	3	4	1	0
Control Delay (s)	13.2	12.4	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.2	12.4	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.1		
Intersection Capacity Utilization		33.4%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	464	66	0	30	1	123	42	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	494	70	0	32	1	131	45	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	564			0			579	556	284	293	591	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	564			0			579	556	284	293	591	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	93	100	78	89	100
cM capacity (veh/h)	1004			1565			367	438	719	598	416	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	261	317	33	176
Volume Left	14	0	0	131
Volume Right	0	70	1	0
cSH	1565	1700	444	538
Volume to Capacity	0.01	0.19	0.07	0.33
Queue Length 95th (ft)	1	0	6	35
Control Delay (s)	0.5	0.0	13.8	14.9
Lane LOS	A		B	B
Approach Delay (s)	0.2		13.8	14.9
Approach LOS			B	B

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	3	0	3	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	3	0	3	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	52			29			71	80	51	73	73	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	52			29			71	80	51	73	73	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	100	100	99	100	100
cM capacity (veh/h)	1554			1584			925	656	1023	900	806	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	52	3	5
Volume Left	0	0	0	5
Volume Right	17	3	0	0
cSH	1554	1584	656	900
Volume to Capacity	0.00	0.00	0.00	0.01
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	10.5	9.0
Lane LOS			B	A
Approach Delay (s)	0.0	0.0	10.5	9.0
Approach LOS			B	A

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	14.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	376	1	1	10	47	151
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	409	1	1	11	51	164
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	146	133	215			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	146	133	215			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	52	100	100			
cM capacity (veh/h)	850	916	1367			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	410	12	215
Volume Left	409	1	0
Volume Right	1	0	164
cSH	850	1367	1700
Volume to Capacity	0.48	0.00	0.13
Queue Length 95th (ft)	67	0	0
Control Delay (s)	13.1	0.7	0.0
Lane LOS	B	A	
Approach Delay (s)	13.1	0.7	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	8.4		
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
371: Port Industrial Road & W 1st Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	35	445	4	4	559	6	16	3	5	5	0	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	40	511	5	5	643	7	18	3	6	6	0	49
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	643			516			1295	1246	514	1255	1252	646
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	643			516			1295	1246	514	1255	1252	646
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			84	98	99	96	100	89
cM capacity (veh/h)	901			1060			114	159	543	133	157	456

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	40	516	5	649	28	55
Volume Left	40	0	5	0	18	6
Volume Right	0	5	0	7	6	49
cSH	901	1700	1060	1700	143	364
Volume to Capacity	0.04	0.30	0.00	0.38	0.19	0.15
Queue Length 95th (ft)	4	0	0	0	17	13
Control Delay (s)	9.2	0.0	8.4	0.0	36.1	16.6
Lane LOS	A		A		E	C
Approach Delay (s)	0.7		0.1		36.1	16.6
Approach LOS					E	C

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
372: Port Industrial Road & Myrtle Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	377	10	15	490	119	9	14	39	61	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	410	11	16	533	129	10	15	42	66	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			421			1115	1147	415	1132	1088	597
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			421			1115	1147	415	1132	1088	597
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			94	92	93	57	97	94
cM capacity (veh/h)	890			1097			157	182	612	154	209	505

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	439	678	67	102
Volume Left	18	16	10	66
Volume Right	11	129	42	29
cSH	890	1097	314	196
Volume to Capacity	0.02	0.01	0.21	0.52
Queue Length 95th (ft)	2	1	20	67
Control Delay (s)	0.6	0.4	19.6	41.8
Lane LOS	A	A	C	E
Approach Delay (s)	0.6	0.4	19.6	41.8
Approach LOS			C	E

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	331	2	4	0	381	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	372	2	4	0	428	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	428			374			404	833	373	454	406	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	428			374			404	833	373	454	406	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	88	95	100	100	100
cM capacity (veh/h)	1105			560			549	299	673	440	525	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	374	4	428	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	428	33
cSH	1105	1700	560	1700	406
Volume to Capacity	0.01	0.22	0.01	0.25	0.17
Queue Length 95th (ft)	1	0	1	0	15
Control Delay (s)	8.3	0.0	11.5	0.0	15.6
Lane LOS	A		B		C
Approach Delay (s)	0.2		0.1		15.6
Approach LOS					C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/19/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	40	0	2	0	0	0	31	51	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	47	0	2	0	0	0	36	60	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		114	96	0	174	95	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		114	96	0	174	95	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	94	100	95	100
cM capacity (veh/h)	1554			1620		805	764	1076	706	774	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	49	0	96	40
Volume Left	47	0	0	2
Volume Right	2	0	60	0
cSH	1554	1700	932	770
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	351	4	15	469	31	10	8	25	32	8	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1771			1845			1761	1538		1749	
Flt Permitted		0.98			0.99			0.81	1.00		0.81	
Satd. Flow (perm)		1744			1824			1472	1538		1451	
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)	12	377	4	16	504	33	11	9	27	34	9	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	393	0	0	551	0	0	20	4	0	45	0
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		24.1			24.1			5.6	5.6		5.6	
Effective Green, g (s)		24.6			24.6			6.1	6.1		6.1	
Actuated g/C Ratio		0.64			0.64			0.16	0.16		0.16	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1109			1159			232	242		229	
v/s Ratio Prot												
v/s Ratio Perm		0.23			c0.30			0.01	0.00		c0.03	
v/c Ratio		0.35			0.48			0.09	0.02		0.20	
Uniform Delay, d1		3.3			3.7			13.9	13.8		14.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.2	0.0		0.4	
Delay (s)		3.5			4.0			14.1	13.8		14.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.5			4.0			13.9			14.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	38.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	195	15	2	278	19	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	222	17	2	316	22	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			239		542	222
vC1, stage 1 conf vol					222	
vC2, stage 2 conf vol					320	
vCu, unblocked vol			239		542	222
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		97	100
cM capacity (veh/h)			1334		638	789

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	222	17	2	316	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1334	1700	655
Volume to Capacity	0.13	0.01	0.00	0.19	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.7
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.7
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	24.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	121	1239	11	0	0	0	0	56	25	16	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3343						3237			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3343						3237			3066	
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)	130	1332	12	0	0	0	0	60	27	17	88	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	1474	0	0	0	0	0	63	0	0	105	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2622						328			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.44									c0.03	
v/c Ratio		0.56						0.19			0.34	
Uniform Delay, d1		2.9						28.8			29.3	
Progression Factor		1.00						1.00			0.58	
Incremental Delay, d2		0.9						0.3			0.6	
Delay (s)		3.8						29.1			17.5	
Level of Service		A						C			B	
Approach Delay (s)		3.8			0.0			29.1			17.5	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1204	65	0	0	0	0	81	123	79	83	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3335						1711			1621	
Flt Permitted		1.00						1.00			0.71	
Satd. Flow (perm)		3335						1711			1173	
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)	18	1416	76	0	0	0	0	95	145	93	98	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1506	0	0	0	0	0	217	0	0	191	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.8						15.3			15.3	
Effective Green, g (s)		31.8						15.3			15.3	
Actuated g/C Ratio		0.58						0.28			0.28	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1925						475			326	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.45									c0.16	
v/c Ratio		0.78						0.46			0.59	
Uniform Delay, d1		9.0						16.5			17.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.1						0.7			2.7	
Delay (s)		11.0						17.2			19.8	
Level of Service		B						B			B	
Approach Delay (s)		11.0			0.0			17.2			19.8	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1191	18	0	0	0	0	26	25	26	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3352						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3352						1597			1348	
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)	24	1228	19	0	0	0	0	27	26	27	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1270	0	0	0	0	0	30	0	0	56	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		31.0						4.5			4.5	
Effective Green, g (s)		31.5						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2373						179			151	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.38									c0.04	
v/c Ratio		0.54						0.17			0.37	
Uniform Delay, d1		3.1						17.9			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.4			1.5	
Delay (s)		3.3						18.3			19.8	
Level of Service		A						B			B	
Approach Delay (s)		3.3			0.0			18.3			19.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	44.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
418: Simpson Avenue/N Park Street #1012 & Ontario Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	48	1214	19	0	0	0	0	31	37	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	49	1252	20	0	0	0	0	32	38	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1271			1384	1360	636	779	1370	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1271			1384	1360	636	779	1370	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	77	91	79	68	100
cM capacity (veh/h)	1607			542			75	141	418	212	143	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	675	645	70	92
Volume Left	49	0	0	45
Volume Right	0	20	38	0
cSH	1607	1700	221	171
Volume to Capacity	0.03	0.38	0.32	0.54
Queue Length 95th (ft)	2	0	33	68
Control Delay (s)	0.9	0.0	28.7	48.3
Lane LOS	A		D	E
Approach Delay (s)	0.4		28.7	48.3
Approach LOS			D	E

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	876	12	0	0	0	0	458	9	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3323						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	952	13	0	0	0	0	498	10	0	0	0
RTOR Reduction (vph)	55	2	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	55	964	0	0	0	0	0	506	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	20.0	20.0						12.0				
Effective Green, g (s)	21.0	21.0						13.0				
Actuated g/C Ratio	0.50	0.50						0.31				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	876	1662						1081				
v/s Ratio Prot		c0.29						c0.14				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.58						0.47				
Uniform Delay, d1	5.4	7.4						11.7				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.5						0.3				
Delay (s)	5.5	7.9						12.0				
Level of Service	A	A						B				
Approach Delay (s)		7.6			0.0			12.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1133	71	0	0	0	0	27	174	42	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1575	1504		1811	
Flt Permitted		1.00	1.00					1.00	1.00		0.74	
Satd. Flow (perm)		2893	1300					1575	1504		1383	
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)	18	1218	76	0	0	0	0	29	187	45	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	40	40	0	0	0
Lane Group Flow (vph)	0	1236	67	0	0	0	0	69	67	0	79	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.1	53.1					7.9	7.9		7.9	
Effective Green, g (s)		53.6	53.6					8.4	8.4		8.4	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2215	995					189	180		166	
v/s Ratio Prot		c0.43						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.56	0.07					0.37	0.37		0.48	
Uniform Delay, d1		3.4	2.0					28.4	28.4		28.7	
Progression Factor		0.28	0.28					1.00	1.00		1.00	
Incremental Delay, d2		0.9	0.1					1.2	1.3		2.1	
Delay (s)		1.8	0.7					29.6	29.7		30.9	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.8			0.0			29.6			30.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	24	1103	25	0	0	0	0	12	88	8	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2883						1314			1459	
Flt Permitted		1.00						1.00			0.86	
Satd. Flow (perm)		2883						1314			1282	
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)	25	1161	26	0	0	0	0	13	93	8	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	47	0	0	0	0
Lane Group Flow (vph)	0	1211	0	0	0	0	0	59	0	0	19	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.3						7.7			7.7	
Effective Green, g (s)		54.3						7.7			7.7	
Actuated g/C Ratio		0.78						0.11			0.11	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2236						145			141	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.42									0.01	
v/c Ratio		0.54						0.41			0.13	
Uniform Delay, d1		3.0						29.0			28.1	
Progression Factor		0.37						1.00			1.00	
Incremental Delay, d2		0.6						1.9			0.4	
Delay (s)		1.7						30.9			28.6	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			30.9			28.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	947	16	0	0	0	0	0	37	299	227	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2888							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2888							1289	1681	1405	
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)	0	997	17	0	0	0	0	0	39	315	239	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	33	164	10	0
Lane Group Flow (vph)	0	1012	0	0	0	0	0	0	6	107	273	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		28.9							9.5	18.1	18.1	
Effective Green, g (s)		29.4							10.0	18.6	18.6	
Actuated g/C Ratio		0.42							0.14	0.27	0.27	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1213							184	447	373	
v/s Ratio Prot		c0.35							c0.00	0.06	c0.19	
v/s Ratio Perm												
v/c Ratio		0.83							0.03	0.24	0.73	
Uniform Delay, d1		18.1							25.8	20.1	23.4	
Progression Factor		1.11							1.00	1.00	1.00	
Incremental Delay, d2		6.3							0.3	1.3	12.0	
Delay (s)		26.4							26.1	21.4	35.5	
Level of Service		C							C	C	D	
Approach Delay (s)		26.4			0.0			26.1			28.6	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	8	403	12	0	0	0	0	45	26	480	48	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2879						1416		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2879						1416		1681	1360	
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)	9	429	13	0	0	0	0	48	28	511	51	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	448	0	0	0	0	0	51	0	281	281	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		18.4						6.8		31.3	31.3	
Effective Green, g (s)		18.9						7.3		31.8	31.8	
Actuated g/C Ratio		0.27						0.10		0.45	0.45	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		777						148		764	618	
v/s Ratio Prot								c0.04		0.17	c0.21	
v/s Ratio Perm		0.16										
v/c Ratio		0.58						0.34		0.37	0.45	
Uniform Delay, d1		22.1						29.1		12.5	13.1	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.0						1.4		1.4	2.4	
Delay (s)		23.1						30.5		13.9	15.5	
Level of Service		C						C		B	B	
Approach Delay (s)		23.1			0.0			30.5			14.7	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	327	0	538	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1791		2111		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1791		2111		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	363	0	598	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	363	0	598	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		29.6		29.6		
Effective Green, g (s)		29.6		29.6		
Actuated g/C Ratio		0.75		0.75		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1335		1574		
v/s Ratio Prot		0.20		c0.28		
v/s Ratio Perm						
v/c Ratio		0.27		0.38		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.2		
Delay (s)		1.7		1.9		
Level of Service		A		A		
Approach Delay (s)	1.7			1.9	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	39.7	Sum of lost time (s)	10.1
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	919	23	18	167	0	0	92	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					3490			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3490			3044			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	957	24	19	174	0	0	96	258
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	73	0
Lane Group Flow (vph)	0	0	0	0	994	0	0	193	0	0	281	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					48.8			12.2			12.2	
Effective Green, g (s)					49.3			12.7			12.7	
Actuated g/C Ratio					0.70			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2458			552			543	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.28			0.06				
v/c Ratio					0.40			0.35			0.52	
Uniform Delay, d1					4.3			25.0			25.9	
Progression Factor					1.37			1.04			1.00	
Incremental Delay, d2					0.5			0.4			0.8	
Delay (s)					6.3			26.3			26.7	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.3			26.3			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1227	19	13	389	0	0	52	278
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	4.0
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3353			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3353			1679			1710	1615
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)	0	0	0	15	1305	20	14	414	0	0	55	296
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	47
Lane Group Flow (vph)	0	0	0	0	1338	0	0	428	0	0	55	249
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2060			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.40			c0.25				0.15
v/c Ratio					0.65			0.94			0.12	0.57
Uniform Delay, d1					8.7			24.9			19.2	22.0
Progression Factor					0.62			1.00			1.00	1.00
Incremental Delay, d2					1.5			29.3			0.5	5.3
Delay (s)					6.9			54.2			19.7	27.3
Level of Service					A			D			B	C
Approach Delay (s)		0.0			6.9			54.2			26.1	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1142	94	32	69	0	0	215	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3567	1554		1815			1795	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3567	1554		1552			1795	
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)	0	0	0	46	1202	99	34	73	0	0	226	102
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1248	56	0	107	0	0	304	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					29.5	29.5		15.0			15.0	
Effective Green, g (s)					29.5	29.5		15.0			15.0	
Actuated g/C Ratio					0.56	0.56		0.29			0.29	
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)					2004	873		443			513	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.35	0.04		0.07				
v/c Ratio					0.62	0.06		0.24			0.59	
Uniform Delay, d1					7.8	5.2		14.4			16.1	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.3			1.8	
Delay (s)					8.4	5.3		14.7			18.0	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.1			14.7			18.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	52.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.9%	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)	0	0	0	34	1305	5	18	8	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.97			1.00	
Satd. Flow (prot)					3324			1621			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3324			1676			1777	
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)	0	0	0	36	1388	5	19	9	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1429	0	0	28	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.8			1.3			1.3	
Effective Green, g (s)					30.3			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2512			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.43			c0.02				
v/c Ratio					0.57			0.37			0.29	
Uniform Delay, d1					2.1			18.6			18.5	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			3.1			2.0	
Delay (s)					2.4			21.7			20.5	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.4			21.7			20.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	43	1194	12	53	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	47	1312	13	58	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1325			0			773	1420	0	1420	1413	663
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1325			0			773	1420	0	1420	1413	663
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			76	89	100	100	85	97
cM capacity (veh/h)	517			1622			243	131	1084	88	135	409

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	703	669	73	32
Volume Left	47	0	58	0
Volume Right	0	13	0	12
cSH	1622	1700	208	181
Volume to Capacity	0.03	0.39	0.35	0.18
Queue Length 95th (ft)	2	0	37	16
Control Delay (s)	0.8	0.0	31.2	29.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		31.2	29.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1182	2	512	26	0	0	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3361		1618	1631				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1618	1631				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1328	2	575	29	0	0	0	9
RTOR Reduction (vph)	0	0	0	0	0	0	153	153	0	0	0	9
Lane Group Flow (vph)	0	0	0	0	1330	0	146	152	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.2		10.9	10.9				0.7
Effective Green, g (s)					29.2		11.9	11.9				1.7
Actuated g/C Ratio					0.53		0.22	0.22				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1791		351	354				50
v/s Ratio Prot					c0.40							
v/s Ratio Perm							0.09	0.09				c0.00
v/c Ratio					0.74		0.41	0.43				0.01
Uniform Delay, d1					9.9		18.5	18.5				25.7
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.7		0.8	0.8				0.0
Delay (s)					11.6		19.3	19.3				25.8
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.6			19.3			25.8	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1274	192	0	92
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1341	202	0	97
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1341				1341	671
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1341				1341	671
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	75
cM capacity (veh/h)	510				141	394

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	671	671	202	97
Volume Left	0	0	0	0
Volume Right	0	0	202	97
cSH	1700	1700	1700	394
Volume to Capacity	0.39	0.39	0.12	0.25
Queue Length 95th (ft)	0	0	0	24
Control Delay (s)	0.0	0.0	0.0	17.1
Lane LOS				C
Approach Delay (s)	0.0			17.1
Approach LOS				C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	495	1108	0	0	9	100	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	510	1142	0	0	9	103	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			510	510	510	1653	1653	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			510	510	510	1653	1653	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	0	100	
cM capacity (veh/h)			466	563	474	98	390	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	891	762	9	103
Volume Left	0	0	9	0
Volume Right	381	762	0	0
cSH	1700	1700	474	98
Volume to Capacity	0.52	0.45	0.02	1.05
Queue Length 95th (ft)	0	0	1	163
Control Delay (s)	0.0	0.0	12.8	184.0
Lane LOS			B	F
Approach Delay (s)	0.0		169.9	
Approach LOS			F	

Intersection Summary			
Average Delay	10.8		
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	53	0	0	1230	0	487
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	0	0	1337	0	529
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	58	0	0	1337	0	529
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.3			47.6		69.9
Effective Green, g (s)	13.8			48.1		69.9
Actuated g/C Ratio	0.20			0.69		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	349			2412		2787
v/s Ratio Prot	0.03			c0.38		
v/s Ratio Perm						c0.19
v/c Ratio	0.17			0.55		0.19
Uniform Delay, d1	23.3			5.5		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	23.4			6.4		0.1
Level of Service	C			A		A
Approach Delay (s)	23.4			6.4	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	4.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	632	599	487	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1694	1845	3467	
Flt Permitted			0.37	1.00	1.00	
Satd. Flow (perm)			663	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	658	624	507	39
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	658	624	540	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			50.7	55.2	25.3	
Effective Green, g (s)			51.7	55.7	25.8	
Actuated g/C Ratio			0.74	0.80	0.37	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			872	1470	1280	
v/s Ratio Prot			c0.28	0.34	0.16	
v/s Ratio Perm			c0.28			
v/c Ratio			0.75	0.42	0.42	
Uniform Delay, d1			4.7	2.2	16.5	
Progression Factor			0.56	0.08	1.00	
Incremental Delay, d2			2.9	0.7	0.1	
Delay (s)			5.5	0.9	16.6	
Level of Service			A	A	B	
Approach Delay (s)	0.0			3.3	16.6	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	7.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	18.2
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	966	222	0	0	0	22	0	567	152	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.97				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2704				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2704				
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)	1039	239	0	0	0	24	0	610	163	0	0	0
RTOR Reduction (vph)	345	88	0	0	0	23	0	24	0	0	0	0
Lane Group Flow (vph)	289	556	0	0	0	1	0	749	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	8%	17%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	25.6	25.6				2.5		29.9				
Effective Green, g (s)	26.1	26.1				1.5		30.4				
Actuated g/C Ratio	0.37	0.37				0.02		0.43				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	603	620				27		1174				
v/s Ratio Prot								c0.28				
v/s Ratio Perm	0.18	0.33				c0.00						
v/c Ratio	0.48	0.90				0.02		0.64				
Uniform Delay, d1	16.8	20.7				33.5		15.5				
Progression Factor	1.22	0.32				1.00		1.00				
Incremental Delay, d2	1.6	12.0				0.1		1.1				
Delay (s)	22.0	18.5				33.6		16.6				
Level of Service	C	B				C		B				
Approach Delay (s)		20.2			33.6			16.6			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	22	0	0	176	18	53	1509	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1645			4933				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1271			1645			4933				
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)	17	23	0	0	185	19	56	1588	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	40	0	0	198	0	0	1650	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	15%	5%	3%	5%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		13.9			13.9			47.1				
Effective Green, g (s)		14.4			14.4			47.6				
Actuated g/C Ratio		0.21			0.21			0.68				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		261			338			3354				
v/s Ratio Prot					c0.12							
v/s Ratio Perm		0.03						0.33				
v/c Ratio		0.15			0.59			0.49				
Uniform Delay, d1		22.8			25.1			5.4				
Progression Factor		1.02			1.00			0.91				
Incremental Delay, d2		0.3			2.6			0.4				
Delay (s)		23.5			27.7			5.3				
Level of Service		C			C			A				
Approach Delay (s)		23.5			27.7			5.3			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
306: S "L" Street & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	92	147	0	0	98	116	72	1549	105	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.98	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1732	1504		4522				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1234			1732	1504		4522				
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)	97	155	0	0	103	122	76	1631	111	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	19	0	9	0	0	0	0
Lane Group Flow (vph)	0	252	0	0	111	86	0	1809	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	6%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.5			17.5	17.5		44.0				
Effective Green, g (s)		18.0			18.0	18.0		44.0				
Actuated g/C Ratio		0.26			0.26	0.26		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		317			445	387		2842				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.06		0.40				
v/c Ratio		0.79			0.25	0.22		0.64				
Uniform Delay, d1		24.3			20.6	20.5		8.0				
Progression Factor		0.93			1.00	1.00		2.12				
Incremental Delay, d2		12.0			0.3	0.3		1.0				
Delay (s)		34.7			20.9	20.8		18.0				
Level of Service		C			C	C		B				
Approach Delay (s)		34.7			20.9			18.0			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	78	31	0	0	73	32	28	1544	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1786			4382				
Flt Permitted		0.70			1.00			1.00				
Satd. Flow (perm)		1310			1786			4382				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	90	36	0	0	84	37	32	1775	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	126	0	0	106	0	0	1856	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.7			11.7			49.8				
Effective Green, g (s)		12.2			12.2			49.8				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		228			311			3117				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.10						0.42				
v/c Ratio		0.55			0.34			0.60				
Uniform Delay, d1		26.4			25.4			5.1				
Progression Factor		1.60			1.00			0.23				
Incremental Delay, d2		2.8			0.7			0.7				
Delay (s)		45.1			26.0			1.9				
Level of Service		D			C			A				
Approach Delay (s)		45.1			26.0			1.9			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	238	26	0	0	32	18	62	1715	22	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4391				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1057			1418			4391				
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)	253	28	0	0	34	19	66	1824	23	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	281	0	0	44	0	0	1911	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.7			20.7			39.3				
Effective Green, g (s)		21.2			21.2			40.8				
Actuated g/C Ratio		0.30			0.30			0.58				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		320			429			2559				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.27						0.44				
v/c Ratio		0.88			0.10			0.75				
Uniform Delay, d1		23.2			17.6			10.8				
Progression Factor		0.68			1.00			0.61				
Incremental Delay, d2		22.3			0.1			1.7				
Delay (s)		38.0			17.7			8.2				
Level of Service		D			B			A				
Approach Delay (s)		38.0			17.7			8.2			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	54	15	0	0	8	10	23	1686	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.93			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1380			4395				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1132			1380			4395				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	61	17	0	0	9	11	26	1916	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	78	0	0	10	0	0	1959	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		150			183			3309				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.45				
v/c Ratio		0.52			0.06			0.59				
Uniform Delay, d1		28.3			26.5			3.9				
Progression Factor		0.82			1.00			0.24				
Incremental Delay, d2		3.1			0.1			0.5				
Delay (s)		26.4			26.7			1.4				
Level of Service		C			C			A				
Approach Delay (s)		26.4			26.7			1.4			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	70.0	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			

HCM Signalized Intersection Capacity Analysis
310: S "I" Street & W Wishkah Street #1011

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	57	38	35	36	0	0	0	0	17	1450	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4427	
Flt Permitted		1.00			0.79						1.00	
Satd. Flow (perm)		1410			1184						4427	
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)	0	63	42	39	40	0	0	0	0	19	1611	41
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	81	0	0	79	0	0	0	0	0	1669	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.9	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		183			154						3346	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.07						0.38	
v/c Ratio		0.44			0.51						0.50	
Uniform Delay, d1		28.1			28.4						3.4	
Progression Factor		1.00			0.96						0.67	
Incremental Delay, d2		1.7			2.8						0.5	
Delay (s)		29.8			30.0						2.7	
Level of Service		C			C						A	
Approach Delay (s)		29.8			30.0			0.0			2.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
311: Broadway Street & W Wishkah Street #1011

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	148	51	25	76	0	0	0	0	9	1306	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1443			1472						4407	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1443			1328						4407	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	161	55	27	83	0	0	0	0	10	1420	86
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	196	0	0	110	0	0	0	0	0	1509	0
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		14.6			14.6						45.4	
Effective Green, g (s)		15.1			15.1						46.9	
Actuated g/C Ratio		0.22			0.22						0.67	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		311			286						2953	
v/s Ratio Prot		c0.14										
v/s Ratio Perm					0.08						0.34	
v/c Ratio		0.63			0.38						0.51	
Uniform Delay, d1		24.9			23.5						5.8	
Progression Factor		1.00			0.95						0.28	
Incremental Delay, d2		3.9			0.8						0.6	
Delay (s)		28.9			23.0						2.2	
Level of Service		C			C						A	
Approach Delay (s)		28.9			23.0			0.0			2.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
312: S "K" Street & W Wishkah Street #1011

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	77	21	16	45	0	0	0	0	19	1336	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1447			1471						4430	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1447			1340						4430	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	84	23	17	49	0	0	0	0	21	1452	28
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	90	0	0	66	0	0	0	0	0	1499	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.9	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		188			174						3348	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.34	
v/c Ratio		0.48			0.38						0.45	
Uniform Delay, d1		28.2			27.9						3.2	
Progression Factor		1.00			0.51						0.22	
Incremental Delay, d2		1.9			1.3						0.4	
Delay (s)		30.1			15.7						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.1			15.7			0.0			1.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
313: S "L" Street & W Wishkah Street #1011

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	106	30	73	93	0	0	0	0	133	1197	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1811			1823						4572	
Flt Permitted		1.00			0.82						1.00	
Satd. Flow (perm)		1811			1522						4572	
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)	0	112	32	77	98	0	0	0	0	140	1260	33
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	129	0	0	175	0	0	0	0	0	1430	0
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		530			446						2711	
v/s Ratio Prot		0.07										
v/s Ratio Perm					c0.11						0.31	
v/c Ratio		0.24			0.39						0.53	
Uniform Delay, d1		18.8			19.8						8.4	
Progression Factor		1.00			0.96						0.82	
Incremental Delay, d2		1.1			2.4						0.7	
Delay (s)		19.9			21.4						7.6	
Level of Service		B			C						A	
Approach Delay (s)		19.9			21.4			0.0			7.6	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	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

HCM Signalized Intersection Capacity Analysis
317: Sumner Avenue/N Alder Street/Lincoln Street #1011 & W Wishkah Street #1011

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	43	173	0	0	0	0	22	510	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.94	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1349						2559	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1349						2559	1400
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)	0	0	0	46	184	0	0	0	0	23	543	830
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	98	163
Lane Group Flow (vph)	0	0	0	0	230	0	0	0	0	0	858	277
Heavy Vehicles (%)	2%	2%	2%	42%	4%	2%	2%	2%	2%	0%	10%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					17.5						43.5	43.5
Effective Green, g (s)					18.0						44.0	44.0
Actuated g/C Ratio					0.26						0.63	0.63
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					347						1609	880
v/s Ratio Prot												
v/s Ratio Perm					0.17						0.34	0.20
v/c Ratio					0.66						0.53	0.31
Uniform Delay, d1					23.3						7.3	6.0
Progression Factor					0.84						0.58	0.33
Incremental Delay, d2					4.5						1.1	0.8
Delay (s)					24.1						5.3	2.8
Level of Service					C						A	A
Approach Delay (s)		0.0			24.1			0.0			4.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1131	38	0	0	0	0	0	0	19	513	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3107									2722	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3107									2722	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1300	44	0	0	0	0	0	0	22	590	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	1341	0	0	0	0	0	0	0	0	607	0
Heavy Vehicles (%)	0%	4%	6%	2%	2%	2%	2%	2%	2%	0%	13%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		37.8									23.2	
Effective Green, g (s)		38.3									23.7	
Actuated g/C Ratio		0.55									0.34	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1700									922	
v/s Ratio Prot		c0.43										
v/s Ratio Perm											0.22	
v/c Ratio		0.79									0.66	
Uniform Delay, d1		12.6									19.7	
Progression Factor		0.79									1.44	
Incremental Delay, d2		3.3									1.5	
Delay (s)		13.3									29.8	
Level of Service		B									C	
Approach Delay (s)		13.3			0.0			0.0			29.8	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	120	670	0	0	0	0	0	1523	419	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1242			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1242			
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)	126	705	0	0	0	0	0	1603	441	0	0	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	36	0	0	0
Lane Group Flow (vph)	0	821	0	0	0	0	0	1603	405	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	4%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		19.4						42.1	42.1			
Effective Green, g (s)		19.4						42.6	42.6			
Actuated g/C Ratio		0.28						0.61	0.61			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1268						1865	756			
v/s Ratio Prot								c0.52				
v/s Ratio Perm		0.18							0.33			
v/c Ratio		0.65						0.86	0.54			
Uniform Delay, d1		22.3						11.2	8.0			
Progression Factor		0.89						1.81	2.02			
Incremental Delay, d2		1.1						4.7	2.3			
Delay (s)		20.8						25.0	18.4			
Level of Service		C						C	B			
Approach Delay (s)		20.8			0.0			23.6			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	594	419	81	1465	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3261			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3261			2943				
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)	0	0	0	0	612	432	84	1510	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1028	0	0	1588	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					23.7			37.3				
Effective Green, g (s)					24.2			37.8				
Actuated g/C Ratio					0.35			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1127			1589				
v/s Ratio Prot					c0.32							
v/s Ratio Perm								0.54				
v/c Ratio					0.91			1.00				
Uniform Delay, d1					21.9			16.1				
Progression Factor					1.00			0.79				
Incremental Delay, d2					11.1			16.3				
Delay (s)					33.0			29.1				
Level of Service					C			C				
Approach Delay (s)		0.0			33.0			29.1			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	275	49	0	0	0	0	0	0	373	1244	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2940									4395	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2940									4395	
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)	0	296	53	0	0	0	0	0	0	401	1338	0
RTOR Reduction (vph)	0	25	0	0	0	0	0	0	0	0	53	0
Lane Group Flow (vph)	0	324	0	0	0	0	0	0	0	0	1686	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.9									48.1	
Effective Green, g (s)		13.4									48.6	
Actuated g/C Ratio		0.19									0.69	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		563									3051	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.38	
v/c Ratio		0.58									0.55	
Uniform Delay, d1		25.7									5.3	
Progression Factor		1.00									0.63	
Incremental Delay, d2		1.4									0.6	
Delay (s)		27.1									4.0	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			4.0	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	360	305	0	0	0	0	0	1372	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.98						1.00	
Satd. Flow (prot)				1264	3273						4416	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1264	3273						4416	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	391	332	0	0	0	0	0	1491	70
RTOR Reduction (vph)	0	0	0	18	18	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	217	470	0	0	0	0	0	1555	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				17.8	17.8						43.2	
Effective Green, g (s)				18.3	18.3						43.7	
Actuated g/C Ratio				0.26	0.26						0.62	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				330	856						2757	
v/s Ratio Prot				c0.17	0.14						c0.35	
v/s Ratio Perm												
v/c Ratio				0.66	0.55						0.56	
Uniform Delay, d1				23.0	22.3						7.6	
Progression Factor				1.13	1.19						1.00	
Incremental Delay, d2				2.1	0.3						0.8	
Delay (s)				28.1	26.9						8.5	
Level of Service				C	C						A	
Approach Delay (s)		0.0			27.3			0.0			8.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
323: W Wishkah Street #121 #122 & S Chehalis Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1290	37	28	1113	2	356	9	18	17	4	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.95	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.98	
Satd. Flow (prot)		3329		1727	3342		1681	1673			1732	
Flt Permitted		0.93		0.95	1.00		0.95	0.96			0.98	
Satd. Flow (perm)		3084		1727	3342		1681	1673			1732	
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)	18	1518	44	33	1309	2	419	11	21	20	5	15
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	14	0
Lane Group Flow (vph)	0	1579	0	33	1311	0	226	222	0	0	26	0
Heavy Vehicles (%)	2%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	1%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.1		5.4	80.5		17.4	17.4			5.1	
Effective Green, g (s)		72.1		5.4	81.5		18.4	18.4			6.1	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1884		79	2308		262	261			90	
v/s Ratio Prot				0.02	c0.39		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.51										
v/c Ratio		0.84		0.42	0.57		0.86	0.85			0.29	
Uniform Delay, d1		18.3		54.8	9.3		48.6	48.4			53.9	
Progression Factor		1.00		1.03	0.60		1.00	1.00			1.00	
Incremental Delay, d2		4.6		2.7	0.8		24.1	21.8			1.8	
Delay (s)		22.9		59.0	6.4		72.7	70.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		22.9			7.7			71.5			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	1633	104	54	1166	0	220	9	111	52	19	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3313		1727	3343		1665	1553			1750	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3313		1727	3343		1665	1553			1750	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	27	1701	108	56	1215	0	229	9	116	54	20	26
RTOR Reduction (vph)	0	3	0	0	0	0	0	64	0	0	12	0
Lane Group Flow (vph)	27	1806	0	56	1215	0	183	107	0	0	88	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.0		7.7	66.1		14.6	14.6			11.7	
Effective Green, g (s)	6.6	66.0		7.7	67.1		15.6	15.6			12.7	
Actuated g/C Ratio	0.06	0.56		0.07	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1853		113	1901		220	205			188	
v/s Ratio Prot	0.02	c0.55		0.03	c0.36		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.28	0.97		0.50	0.64		0.83	0.52			0.47	
Uniform Delay, d1	53.4	25.2		53.3	17.2		49.9	47.7			49.5	
Progression Factor	0.80	0.63		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	12.9		2.5	1.7		23.2	2.7			2.1	
Delay (s)	43.7	28.8		55.8	18.9		73.1	50.4			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		29.0			20.5			62.1			51.6	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	830	3	533	760	0	326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.94	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3442		3145	1616		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3442		3145	1616		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1025	4	658	938	0	402
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1029	0	1089	507	0	402
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	30.1		33.2	75.3		33.2
Effective Green, g (s)	32.1		35.2	75.3		35.2
Actuated g/C Ratio	0.43		0.47	1.00		0.47
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1467		1470	1616		1242
v/s Ratio Prot	c0.30		c0.35	0.31		0.15
v/s Ratio Perm						
v/c Ratio	0.70		0.74	0.31		0.32
Uniform Delay, d1	17.7		16.3	0.0		12.6
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	1.4		1.9	0.5		0.1
Delay (s)	19.1		18.3	0.5		12.7
Level of Service	B		B	A		B
Approach Delay (s)	19.1		12.6		12.7	
Approach LOS	B		B		B	

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	75.3	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			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	21	0	0	9	19	647	1	3	346	56
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	22	0	0	9	20	681	1	3	364	59
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1138	1129	401	1116	1158	684	429			683		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1138	1129	401	1116	1158	684	429			683		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	172	200	649	176	192	452	1129			909		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	22	9	13	689	3	423
Volume Left	0	0	13	7	3	0
Volume Right	22	9	0	1	0	59
cSH	649	452	1129	1129	909	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.25
Queue Length 95th (ft)	3	2	1	1	0	0
Control Delay (s)	10.7	13.1	8.2	0.3	9.0	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.1	0.5		0.1	
Approach LOS	B	B				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
332: S M Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	25	1	10	0	2	4	14	602	2	2	298	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	27	1	11	0	2	4	15	647	2	2	320	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1023	1020	336	1015	1034	648	352			649		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1023	1020	336	1015	1034	648	352			649		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	100	98	100	99	99	99			100		
cM capacity (veh/h)	209	234	708	211	230	472	1213			937		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	39	6	15	649	2	352
Volume Left	27	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	261	349	1213	1700	937	1700
Volume to Capacity	0.15	0.02	0.01	0.38	0.00	0.21
Queue Length 95th (ft)	13	1	1	0	0	0
Control Delay (s)	21.2	15.5	8.0	0.0	8.9	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	21.2	15.5	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	17	400	2	2	226	168
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	20	460	2	2	260	193
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	867	862	356	768	957	461	453			462		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	867	862	356	768	957	461	453			462		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	92	100	100	100	98	99	98			100		
cM capacity (veh/h)	264	289	692	302	244	582	1118			1110		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	20	462	2	453
Volume Left	22	0	20	0	2	0
Volume Right	3	5	0	2	0	193
cSH	289	329	1118	1700	1110	1700
Volume to Capacity	0.09	0.03	0.02	0.27	0.00	0.27
Queue Length 95th (ft)	7	2	1	0	0	0
Control Delay (s)	18.7	16.3	8.3	0.0	8.3	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	18.7	16.3	0.3		0.0	
Approach LOS	C	C				

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	36.7%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
336: Simpson Avenue/N Park Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	378	37	0	0	0	1	98	1	2	232	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	398	39	0	0	0	1	103	1	2	244	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			437			554	417	417	470	437	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			437			554	417	417	470	437	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	80	100	100	52	99
cM capacity (veh/h)	1604			1134			275	528	638	427	513	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	437	0	105	261
Volume Left	0	0	1	2
Volume Right	39	0	1	15
cSH	1604	1700	524	528
Volume to Capacity	0.00	0.00	0.20	0.49
Queue Length 95th (ft)	0	0	19	68
Control Delay (s)	0.0	0.0	13.6	18.3
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.6	18.3
Approach LOS			B	C

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	657	1	3	626	9	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	706	1	3	673	10	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			708		1387	707
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			708		1387	707
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		92	99
cM capacity (veh/h)			864		124	364

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	708	676	12
Volume Left	0	3	10
Volume Right	1	0	2
cSH	1700	864	141
Volume to Capacity	0.42	0.00	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.1	32.9
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	32.9
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	650	0	2	652	10	0	1	0	9	2	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	707	0	2	709	11	0	1	0	10	2	9
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	721			710			1458	1454	712	1448	1449	716
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	721			710			1458	1454	712	1448	1449	716
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	91	98	98
cM capacity (veh/h)	867			874			103	129	434	104	126	423

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	716	722	1	21
Volume Left	10	2	0	10
Volume Right	0	11	0	9
cSH	867	874	129	157
Volume to Capacity	0.01	0.00	0.01	0.13
Queue Length 95th (ft)	1	0	1	11
Control Delay (s)	0.3	0.1	33.1	31.3
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	33.1	31.3
Approach LOS			D	D

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
352: W Wishkah St & Williams Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	653	1	1	647	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	710	1	1	703	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	704			711			1420	1419	710	1420	1419	704
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	704			711			1420	1419	710	1420	1419	704
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	99	100	100
cM capacity (veh/h)	880			875			114	136	433	114	136	437

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	712	705	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	880	875	180	180
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	25.2	25.2
Lane LOS	A	A	D	D
Approach Delay (s)	0.0	0.0	25.2	25.2
Approach LOS			D	D

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	477	124	221	477	11	119	2	265	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	52	524	136	243	524	12	131	2	291	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	538			660			1747	1720	594	2008	1782	533
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	538			660			1747	1720	594	2008	1782	533
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			74			0	97	43	0	98	94
cM capacity (veh/h)	1013			928			48	63	507	14	57	545

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	712	779	424	54
Volume Left	52	243	131	19
Volume Right	136	12	291	34
cSH	1013	928	128	38
Volume to Capacity	0.05	0.26	3.32	1.42
Queue Length 95th (ft)	4	26	Err	140
Control Delay (s)	1.3	5.9	Err	457.8
Lane LOS	A	A	F	F
Approach Delay (s)	1.3	5.9	Err	457.8
Approach LOS			F	F

Intersection Summary			
Average Delay	2169.1		
Intersection Capacity Utilization	112.3%	ICU Level of Service	H
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
354: W Wishkah Street & S Garfield St

8/19/2009

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	760	0	0	27	709
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	826	0	0	29	771
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			829	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			829	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			334	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	826	29	771
Volume Left	0	29	0
Volume Right	826	0	0
cSH	1700	1578	1700
Volume to Capacity	0.49	0.02	0.45
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
355: S Garfield St & W Heron Street

8/19/2009

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	773	5	0	20	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	849	5	0	22	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1702	1702	1704	0
vC1, stage 1 conf vol			1702	1702	0	
vC2, stage 2 conf vol			0	0	1704	
vCu, unblocked vol	0		1702	1702	1704	0
tC, single (s)	4.1		7.1	6.7	6.5	6.2
tC, 2 stage (s)			6.1	5.7	5.5	
tF (s)	2.2		3.5	4.2	4.0	3.3
p0 queue free %	47		100	44	100	100
cM capacity (veh/h)	1604		50	39	62	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	566	289	22
Volume Left	566	283	0
Volume Right	0	5	0
cSH	1604	1604	39
Volume to Capacity	0.53	0.53	0.56
Queue Length 95th (ft)	82	82	50
Control Delay (s)	9.7	9.7	179.9
Lane LOS	A	A	F
Approach Delay (s)	9.7		179.9
Approach LOS			F

Intersection Summary			
Average Delay	14.0		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
356: N Monroe Street & W Heron Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	22	3	0	0	172	8	12	769	21	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	25	3	0	0	195	9	14	874	24	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	571	925	0	915	913	449	0			898		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	571	925	0	915	913	449	0			898		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	99	100	100	28	98	99			100		
cM capacity (veh/h)	165	269	1091	226	271	560	1600			752		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	28	205	451	461
Volume Left	25	0	14	0
Volume Right	0	9	0	24
cSH	173	278	1600	1700
Volume to Capacity	0.16	0.74	0.01	0.27
Queue Length 95th (ft)	14	133	1	0
Control Delay (s)	29.8	47.1	0.3	0.0
Lane LOS	D	E	A	
Approach Delay (s)	29.8	47.1	0.1	
Approach LOS	D	E		

Intersection Summary				
Average Delay		9.3		
Intersection Capacity Utilization		45.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
357: N Lincoln Street & W Heron Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	8	6	0	0	16	2	5	783	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	8	6	0	0	17	2	5	816	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	429	831	2	834	829	410	0			821		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	429	831	2	834	829	410	0			821		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	95	100	100			100		
cM capacity (veh/h)	491	306	1086	259	307	596	1593			804		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	15	19	413	413
Volume Left	8	0	5	0
Volume Right	0	2	0	5
cSH	390	325	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.24
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	14.6	16.8	0.1	0.0
Lane LOS	B	C	A	
Approach Delay (s)	14.6	16.8	0.1	
Approach LOS	B	C		

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		36.4%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
358: N Washington Street & W Heron Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	92	9	38	728	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	107	10	44	847	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	579	949	4	947	945	431	3			857		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	579	949	4	947	945	431	3			857		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	95	97	100	100	52	98	97			100		
cM capacity (veh/h)	216	222	1019	181	223	524	1599			776		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	117	467	430
Volume Left	12	0	44	0
Volume Right	0	10	0	7
cSH	218	235	1599	1700
Volume to Capacity	0.09	0.50	0.03	0.25
Queue Length 95th (ft)	7	64	2	0
Control Delay (s)	23.0	34.6	0.9	0.0
Lane LOS	C	D	A	
Approach Delay (s)	23.0	34.6	0.5	
Approach LOS	C	D		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		39.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
359: N Washington Street & W Wishkah Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	18	86	42	0	0	0	0	3	536	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	21	102	50	0	0	0	0	4	638	11
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.86	0.86	0.86	0.86	0.86		0.86					
vC, conflicting volume	679	661	327	362	666	7	652			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	291	270	0	0	276	7	260			7		
tC, single (s)	7.8	6.8	7.0	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.3	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	98	87	91	100	100			100		
cM capacity (veh/h)	477	514	924	818	533	1055	1113			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	36	152	323	330
Volume Left	0	102	4	0
Volume Right	21	0	0	11
cSH	701	696	1541	1700
Volume to Capacity	0.05	0.22	0.00	0.19
Queue Length 95th (ft)	4	21	0	0
Control Delay (s)	10.4	11.6	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	10.4	11.6	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.6		
Intersection Capacity Utilization		37.5%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
360: N Lincoln Street & W Wishkah Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	613	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	659	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked	0.97	0.97	0.97	0.97	0.97		0.97					
vC, conflicting volume	696	688	338	363	695	4	672			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	636	628	268	294	634	4	611			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	346	389	717	603	386	1080	939			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	340	342
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	416	491	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.20
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	14.0	12.8	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	14.0	12.8	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		0.9		
Intersection Capacity Utilization		36.2%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	567	66	0	30	1	123	42	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	603	70	0	32	1	131	45	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	673			0			688	666	339	348	701	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	673			0			688	666	339	348	701	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	76	88	100
cM capacity (veh/h)	913			1565			302	379	663	542	360	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	315	372	33	176
Volume Left	14	0	0	131
Volume Right	0	70	1	0
cSH	1565	1700	385	480
Volume to Capacity	0.01	0.22	0.09	0.37
Queue Length 95th (ft)	1	0	7	41
Control Delay (s)	0.4	0.0	15.2	16.7
Lane LOS	A		C	C
Approach Delay (s)	0.2		15.2	16.7
Approach LOS			C	C

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
362: S Division Street & W Heron Street

8/19/2009

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	4	0	4	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	4	0	4	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	53			29			72	80	51	74	74	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	53			29			72	80	51	74	74	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	99	100	99	100	100
cM capacity (veh/h)	1552			1584			924	656	1023	897	805	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	53	4	5
Volume Left	0	0	0	5
Volume Right	17	4	0	0
cSH	1552	1584	656	897
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	0
Control Delay (s)	0.0	0.0	10.5	9.0
Lane LOS			B	A
Approach Delay (s)	0.0	0.0	10.5	9.0
Approach LOS			B	A

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	14.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
363: Hood Street & S Division Street

8/19/2009

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	376	1	1	10	48	296
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	409	1	1	11	52	322
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	226	213	374			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	226	213	374			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	47	100	100			
cM capacity (veh/h)	766	827	1196			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	410	12	374
Volume Left	409	1	0
Volume Right	1	0	322
cSH	766	1196	1700
Volume to Capacity	0.53	0.00	0.22
Queue Length 95th (ft)	80	0	0
Control Delay (s)	15.0	0.7	0.0
Lane LOS	B	A	
Approach Delay (s)	15.0	0.7	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
371: Port Industrial Road & W 1st Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	35	489	4	4	559	6	16	3	5	5	0	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	40	562	5	5	643	7	18	3	6	6	0	49
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	643			567			1346	1297	564	1305	1302	646
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	643			567			1346	1297	564	1305	1302	646
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			83	98	99	95	100	89
cM capacity (veh/h)	901			1015			105	148	508	123	147	456

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	40	567	5	649	28	55
Volume Left	40	0	5	0	18	6
Volume Right	0	5	0	7	6	49
cSH	901	1700	1015	1700	132	355
Volume to Capacity	0.04	0.33	0.00	0.38	0.21	0.16
Queue Length 95th (ft)	4	0	0	0	19	14
Control Delay (s)	9.2	0.0	8.6	0.0	39.4	17.0
Lane LOS	A		A		E	C
Approach Delay (s)	0.6		0.1		39.4	17.0
Approach LOS					E	C

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
372: Port Industrial Road & Myrtle Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	413	10	15	490	119	9	14	39	68	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	449	11	16	533	129	10	15	42	74	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			460			1154	1186	454	1171	1127	597
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			460			1154	1186	454	1171	1127	597
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			98			93	91	93	48	97	94
cM capacity (veh/h)	890			1060			147	173	581	143	198	505

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	478	678	67	110
Volume Left	18	16	10	74
Volume Right	11	129	42	29
cSH	890	1060	296	181
Volume to Capacity	0.02	0.02	0.23	0.61
Queue Length 95th (ft)	2	1	21	84
Control Delay (s)	0.6	0.4	20.7	51.6
Lane LOS	A	A	C	F
Approach Delay (s)	0.6	0.4	20.7	51.6
Approach LOS			C	F

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	367	2	4	0	381	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	412	2	4	0	428	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	428			415			445	873	413	494	446	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	428			415			445	873	413	494	446	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	87	95	100	100	100
cM capacity (veh/h)	1105			531			516	283	639	410	498	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	415	4	428	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	428	33
cSH	1105	1700	531	1700	385
Volume to Capacity	0.01	0.24	0.01	0.25	0.18
Queue Length 95th (ft)	1	0	1	0	16
Control Delay (s)	8.3	0.0	11.8	0.0	16.4
Lane LOS	A		B		C
Approach Delay (s)	0.2		0.1		16.4
Approach LOS					C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/19/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	40	0	2	0	0	0	31	51	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	47	0	2	0	0	0	36	60	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		114	96	0	174	95	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		114	96	0	174	95	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	94	100	95	100
cM capacity (veh/h)	1554			1620		805	764	1076	706	774	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	49	0	96	40
Volume Left	47	0	0	2
Volume Right	2	0	60	0
cSH	1554	1700	932	770
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	363	4	15	469	31	10	8	25	32	8	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1771			1845			1761	1538		1749	
Flt Permitted		0.98			0.99			0.81	1.00		0.81	
Satd. Flow (perm)		1745			1824			1472	1538		1451	
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)	12	390	4	16	504	33	11	9	27	34	9	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	406	0	0	551	0	0	20	4	0	45	0
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		24.1			24.1			5.6	5.6		5.6	
Effective Green, g (s)		24.6			24.6			6.1	6.1		6.1	
Actuated g/C Ratio		0.64			0.64			0.16	0.16		0.16	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1109			1159			232	242		229	
v/s Ratio Prot												
v/s Ratio Perm		0.23			c0.30			0.01	0.00		c0.03	
v/c Ratio		0.37			0.48			0.09	0.02		0.20	
Uniform Delay, d1		3.3			3.7			13.9	13.8		14.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.2	0.0		0.4	
Delay (s)		3.6			4.0			14.1	13.8		14.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.6			4.0			13.9			14.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	38.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	207	15	2	278	19	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	235	17	2	316	22	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			252		556	235
vC1, stage 1 conf vol					235	
vC2, stage 2 conf vol					320	
vCu, unblocked vol			252		556	235
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		97	100
cM capacity (veh/h)			1319		633	775

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	235	17	2	316	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1319	1700	649
Volume to Capacity	0.14	0.01	0.00	0.19	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.8
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.8
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	24.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
400: Simpson Avenue/N Park Street #1012 & Market Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	121	1246	11	0	0	0	0	56	25	16	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3344						3237			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3344						3237			3066	
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)	130	1340	12	0	0	0	0	60	27	17	88	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	1482	0	0	0	0	0	63	0	0	105	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2623						328			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.44									c0.03	
v/c Ratio		0.56						0.19			0.34	
Uniform Delay, d1		2.9						28.8			29.3	
Progression Factor		1.00						1.00			0.58	
Incremental Delay, d2		0.9						0.3			0.6	
Delay (s)		3.8						29.1			17.5	
Level of Service		A						C			B	
Approach Delay (s)		3.8			0.0			29.1			17.5	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1204	65	0	0	0	0	81	123	79	83	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3335						1711			1621	
Flt Permitted		1.00						1.00			0.71	
Satd. Flow (perm)		3335						1711			1173	
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)	18	1416	76	0	0	0	0	95	145	93	98	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1506	0	0	0	0	0	217	0	0	191	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.8						15.3			15.3	
Effective Green, g (s)		31.8						15.3			15.3	
Actuated g/C Ratio		0.58						0.28			0.28	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1925						475			326	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.45									c0.16	
v/c Ratio		0.78						0.46			0.59	
Uniform Delay, d1		9.0						16.5			17.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.1						0.7			2.7	
Delay (s)		11.0						17.2			19.8	
Level of Service		B						B			B	
Approach Delay (s)		11.0			0.0			17.2			19.8	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1191	18	0	0	0	0	26	25	26	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3352						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3352						1597			1348	
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)	24	1228	19	0	0	0	0	27	26	27	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1270	0	0	0	0	0	30	0	0	56	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		31.0						4.5			4.5	
Effective Green, g (s)		31.5						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2373						179			151	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.38									c0.04	
v/c Ratio		0.54						0.17			0.37	
Uniform Delay, d1		3.1						17.9			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.4			1.5	
Delay (s)		3.3						18.3			19.8	
Level of Service		A						B			B	
Approach Delay (s)		3.3			0.0			18.3			19.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	44.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
418: Simpson Avenue/N Park Street #1012 & Ontario Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	48	1214	19	0	0	0	0	31	37	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	49	1252	20	0	0	0	0	32	38	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1271			1384	1360	636	779	1370	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1271			1384	1360	636	779	1370	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	77	91	79	68	100
cM capacity (veh/h)	1607			542			75	141	418	212	143	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	675	645	70	92
Volume Left	49	0	0	45
Volume Right	0	20	38	0
cSH	1607	1700	221	171
Volume to Capacity	0.03	0.38	0.32	0.54
Queue Length 95th (ft)	2	0	33	68
Control Delay (s)	0.9	0.0	28.7	48.3
Lane LOS	A		D	E
Approach Delay (s)	0.4		28.7	48.3
Approach LOS			D	E

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	876	12	0	0	0	0	458	9	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3323						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	952	13	0	0	0	0	498	10	0	0	0
RTOR Reduction (vph)	55	2	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	55	964	0	0	0	0	0	506	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	20.0	20.0						12.0				
Effective Green, g (s)	21.0	21.0						13.0				
Actuated g/C Ratio	0.50	0.50						0.31				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	876	1662						1081				
v/s Ratio Prot		c0.29						c0.14				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.58						0.47				
Uniform Delay, d1	5.4	7.4						11.7				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.5						0.3				
Delay (s)	5.5	7.9						12.0				
Level of Service	A	A						B				
Approach Delay (s)		7.6			0.0			12.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1166	71	0	0	0	0	27	174	42	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1575	1504		1811	
Flt Permitted		1.00	1.00					1.00	1.00		0.74	
Satd. Flow (perm)		2893	1300					1575	1504		1385	
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)	18	1254	76	0	0	0	0	29	187	45	34	0
RTOR Reduction (vph)	0	0	8	0	0	0	0	36	36	0	0	0
Lane Group Flow (vph)	0	1272	68	0	0	0	0	73	71	0	79	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.0	53.0					8.0	8.0		8.0	
Effective Green, g (s)		53.5	53.5					8.5	8.5		8.5	
Actuated g/C Ratio		0.76	0.76					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2211	994					191	183		168	
v/s Ratio Prot		c0.44						0.05				
v/s Ratio Perm			0.05						0.05		c0.06	
v/c Ratio		0.58	0.07					0.38	0.39		0.47	
Uniform Delay, d1		3.5	2.1					28.3	28.4		28.7	
Progression Factor		0.28	0.30					1.00	1.00		1.00	
Incremental Delay, d2		1.0	0.1					1.3	1.4		2.1	
Delay (s)		1.9	0.7					29.6	29.7		30.7	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.9			0.0			29.7			30.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	24	1136	25	0	0	0	0	12	88	8	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2883						1314			1459	
Flt Permitted		1.00						1.00			0.86	
Satd. Flow (perm)		2883						1314			1286	
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)	25	1196	26	0	0	0	0	13	93	8	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	43	0	0	0	0
Lane Group Flow (vph)	0	1246	0	0	0	0	0	63	0	0	19	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.1						7.9			7.9	
Effective Green, g (s)		54.1						7.9			7.9	
Actuated g/C Ratio		0.77						0.11			0.11	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2228						148			145	
v/s Ratio Prot								c0.05				
v/s Ratio Perm		0.43									0.01	
v/c Ratio		0.56						0.43			0.13	
Uniform Delay, d1		3.2						28.9			28.0	
Progression Factor		0.38						1.00			1.00	
Incremental Delay, d2		0.7						2.0			0.4	
Delay (s)		1.9						30.9			28.4	
Level of Service		A						C			C	
Approach Delay (s)		1.9			0.0			30.9			28.4	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	968	16	0	0	0	0	0	44	303	227	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2888							1302	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2888							1302	1681	1405	
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)	0	1019	17	0	0	0	0	0	46	319	239	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	39	155	10	0
Lane Group Flow (vph)	0	1034	0	0	0	0	0	0	7	120	274	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	1%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		29.0							9.5	18.0	18.0	
Effective Green, g (s)		29.5							10.0	18.5	18.5	
Actuated g/C Ratio		0.42							0.14	0.26	0.26	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1217							186	444	371	
v/s Ratio Prot		c0.36							c0.01	0.07	c0.20	
v/s Ratio Perm												
v/c Ratio		0.85							0.04	0.27	0.74	
Uniform Delay, d1		18.3							25.8	20.4	23.5	
Progression Factor		1.11							1.00	1.00	1.00	
Incremental Delay, d2		6.9							0.4	1.5	12.5	
Delay (s)		27.2							26.2	21.9	36.0	
Level of Service		C							C	C	D	
Approach Delay (s)		27.2			0.0			26.2			29.1	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	8	415	12	0	0	0	0	45	26	490	48	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2880						1416		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2880						1416		1681	1360	
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)	9	441	13	0	0	0	0	48	28	521	51	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	460	0	0	0	0	0	51	0	287	285	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		18.7						6.8		31.0	31.0	
Effective Green, g (s)		19.2						7.3		31.5	31.5	
Actuated g/C Ratio		0.27						0.10		0.45	0.45	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		790						148		756	612	
v/s Ratio Prot								c0.04		0.17	c0.21	
v/s Ratio Perm		0.16										
v/c Ratio		0.58						0.34		0.38	0.47	
Uniform Delay, d1		21.9						29.1		12.8	13.4	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.1						1.4		1.4	2.5	
Delay (s)		23.0						30.5		14.2	15.9	
Level of Service		C						C		B	B	
Approach Delay (s)		23.0			0.0			30.5			15.1	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	339	0	538	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1791		2111		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1791		2111		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	377	0	598	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	377	0	598	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		29.6		29.6		
Effective Green, g (s)		29.6		29.6		
Actuated g/C Ratio		0.75		0.75		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1335		1574		
v/s Ratio Prot		0.21		c0.28		
v/s Ratio Perm						
v/c Ratio		0.28		0.38		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.2		
Delay (s)		1.7		1.9		
Level of Service		A		A		
Approach Delay (s)	1.7			1.9	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	39.7	Sum of lost time (s)	10.1
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
450: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Market Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	919	23	18	167	0	0	92	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					3490			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3490			3044			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	957	24	19	174	0	0	96	258
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	73	0
Lane Group Flow (vph)	0	0	0	0	994	0	0	193	0	0	281	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					48.8			12.2			12.2	
Effective Green, g (s)					49.3			12.7			12.7	
Actuated g/C Ratio					0.70			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2458			552			543	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.28			0.06				
v/c Ratio					0.40			0.35			0.52	
Uniform Delay, d1					4.3			25.0			25.9	
Progression Factor					1.37			1.04			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					6.3			26.3			26.7	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.3			26.3			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
451: Sumner Avenue/N Alder Street/Lincoln Street #1011 & W First Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1227	19	13	389	0	0	52	278
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	4.0
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3353			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3353			1679			1710	1615
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)	0	0	0	15	1305	20	14	414	0	0	55	296
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	47
Lane Group Flow (vph)	0	0	0	0	1338	0	0	428	0	0	55	249
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2060			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.40			c0.25				0.15
v/c Ratio					0.65			0.94			0.12	0.57
Uniform Delay, d1					8.7			24.9			19.2	22.0
Progression Factor					0.66			1.00			1.00	1.00
Incremental Delay, d2					1.5			29.3			0.5	5.3
Delay (s)					7.2			54.2			19.7	27.3
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.2			54.2			26.1	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1142	94	32	69	0	0	215	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3567	1554		1815			1795	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3567	1554		1552			1795	
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)	0	0	0	46	1202	99	34	73	0	0	226	102
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1248	56	0	107	0	0	304	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					29.5	29.5		15.0			15.0	
Effective Green, g (s)					29.5	29.5		15.0			15.0	
Actuated g/C Ratio					0.56	0.56		0.29			0.29	
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)					2004	873		443			513	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.35	0.04		0.07				
v/c Ratio					0.62	0.06		0.24			0.59	
Uniform Delay, d1					7.8	5.2		14.4			16.1	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.3			1.8	
Delay (s)					8.4	5.3		14.7			18.0	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.1			14.7			18.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	52.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.9%	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)	0	0	0	34	1305	5	18	8	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.97			1.00	
Satd. Flow (prot)					3324			1621			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3324			1676			1777	
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)	0	0	0	36	1388	5	19	9	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1429	0	0	28	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.8			1.3			1.3	
Effective Green, g (s)					30.3			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2512			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.43			c0.02				
v/c Ratio					0.57			0.37			0.29	
Uniform Delay, d1					2.1			18.6			18.5	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			3.1			2.0	
Delay (s)					2.4			21.7			20.5	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.4			21.7			20.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	43	1194	12	53	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	47	1312	13	58	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1325			0			773	1420	0	1420	1413	663
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1325			0			773	1420	0	1420	1413	663
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			76	89	100	100	85	97
cM capacity (veh/h)	517			1622			243	131	1084	88	135	409

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	703	669	73	32
Volume Left	47	0	58	0
Volume Right	0	13	0	12
cSH	1622	1700	208	181
Volume to Capacity	0.03	0.39	0.35	0.18
Queue Length 95th (ft)	2	0	37	16
Control Delay (s)	0.8	0.0	31.2	29.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		31.2	29.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
471: Sumner Avenue/N Alder Street/Lincoln Street #1011 & 23rd Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1182	2	512	26	0	0	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3361		1618	1631				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1618	1631				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1328	2	575	29	0	0	0	9
RTOR Reduction (vph)	0	0	0	0	0	0	153	153	0	0	0	9
Lane Group Flow (vph)	0	0	0	0	1330	0	146	152	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.2		10.9	10.9				0.7
Effective Green, g (s)					29.2		11.9	11.9				1.7
Actuated g/C Ratio					0.53		0.22	0.22				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1791		351	354				50
v/s Ratio Prot					c0.40							
v/s Ratio Perm							0.09	0.09				c0.00
v/c Ratio					0.74		0.41	0.43				0.01
Uniform Delay, d1					9.9		18.5	18.5				25.7
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.7		0.8	0.8				0.0
Delay (s)					11.6		19.3	19.3				25.8
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.6			19.3			25.8	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1274	192	0	96
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1341	202	0	101
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1341				1341	671
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1341				1341	671
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	74
cM capacity (veh/h)	510				141	394

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	671	671	202	101
Volume Left	0	0	0	0
Volume Right	0	0	202	101
cSH	1700	1700	1700	394
Volume to Capacity	0.39	0.39	0.12	0.26
Queue Length 95th (ft)	0	0	0	25
Control Delay (s)	0.0	0.0	0.0	17.2
Lane LOS				C
Approach Delay (s)	0.0			17.2
Approach LOS				C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
479: Sumner Avenue/N Alder Street/Lincoln Street #1011 & 6th Street

8/19/2009

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	499	1108	0	0	9	100	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	514	1142	0	0	9	103	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			514	514	514	1657	1657	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			514	514	514	1657	1657	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	0	100	
cM capacity (veh/h)			464	560	471	98	389	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	895	762	9	103
Volume Left	0	0	9	0
Volume Right	381	762	0	0
cSH	1700	1700	471	98
Volume to Capacity	0.53	0.45	0.02	1.05
Queue Length 95th (ft)	0	0	2	164
Control Delay (s)	0.0	0.0	12.8	186.5
Lane LOS			B	F
Approach Delay (s)	0.0		172.2	
Approach LOS			F	

Intersection Summary			
Average Delay	10.9		
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	53	0	0	1230	0	497
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	0	0	1337	0	540
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	58	0	0	1337	0	540
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.3			47.7		70.0
Effective Green, g (s)	13.8			48.2		70.0
Actuated g/C Ratio	0.20			0.69		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	349			2413		2787
v/s Ratio Prot	0.03			c0.38		
v/s Ratio Perm						c0.19
v/c Ratio	0.17			0.55		0.19
Uniform Delay, d1	23.3			5.5		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	23.4			6.3		0.1
Level of Service	C			A		A
Approach Delay (s)	23.4			6.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	632	599	497	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1694	1845	3468	
Flt Permitted			0.36	1.00	1.00	
Satd. Flow (perm)			651	1845	3468	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	658	624	518	39
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	658	624	551	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			50.8	55.3	25.4	
Effective Green, g (s)			51.8	55.8	25.9	
Actuated g/C Ratio			0.74	0.80	0.37	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			868	1471	1283	
v/s Ratio Prot			c0.28	0.34	0.16	
v/s Ratio Perm			c0.28			
v/c Ratio			0.76	0.42	0.43	
Uniform Delay, d1			4.9	2.2	16.5	
Progression Factor			0.56	0.08	1.00	
Incremental Delay, d2			3.0	0.7	0.1	
Delay (s)			5.7	0.9	16.6	
Level of Service			A	A	B	
Approach Delay (s)	0.0			3.4	16.6	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	7.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	947	218	0	0	0	21	0	646	143	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.97				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2449				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2449				
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)	1018	234	0	0	0	23	0	695	154	0	0	0
RTOR Reduction (vph)	355	91	0	0	0	22	0	19	0	0	0	0
Lane Group Flow (vph)	266	540	0	0	0	1	0	830	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	23%	17%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	24.2	24.2				2.5		31.3				
Effective Green, g (s)	24.7	24.7				1.5		31.8				
Actuated g/C Ratio	0.35	0.35				0.02		0.45				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	571	587				27		1113				
v/s Ratio Prot								c0.34				
v/s Ratio Perm	0.16	0.33				c0.00						
v/c Ratio	0.47	0.92				0.05		0.75				
Uniform Delay, d1	17.5	21.7				33.6		15.8				
Progression Factor	1.25	0.31				1.00		1.00				
Incremental Delay, d2	1.6	14.7				0.3		2.8				
Delay (s)	23.6	21.4				33.9		18.5				
Level of Service	C	C				C		B				
Approach Delay (s)		22.5			33.9			18.5			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	21	0	0	158	18	45	1577	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1631			4674				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1270			1631			4674				
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)	17	22	0	0	166	19	47	1660	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	180	0	0	1713	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	16%	5%	4%	11%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		13.2			13.2			47.8				
Effective Green, g (s)		13.7			13.7			48.3				
Actuated g/C Ratio		0.20			0.20			0.69				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		249			319			3225				
v/s Ratio Prot					c0.11							
v/s Ratio Perm		0.03						0.37				
v/c Ratio		0.16			0.56			0.53				
Uniform Delay, d1		23.4			25.5			5.3				
Progression Factor		1.03			1.00			0.99				
Incremental Delay, d2		0.3			2.3			0.4				
Delay (s)		24.4			27.7			5.6				
Level of Service		C			C			A				
Approach Delay (s)		24.4			27.7			5.6			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	64	1629	96	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1712	1504		4340				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4340				
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)	95	152	0	0	86	120	67	1715	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	16	0	8	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	80	0	1875	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	11%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.3			17.3	17.3		44.2				
Effective Green, g (s)		17.8			17.8	17.8		44.2				
Actuated g/C Ratio		0.25			0.25	0.25		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		316			435	382		2740				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.43				
v/c Ratio		0.78			0.22	0.21		0.68				
Uniform Delay, d1		24.3			20.6	20.6		8.4				
Progression Factor		0.93			1.00	1.00		2.07				
Incremental Delay, d2		11.1			0.3	0.3		1.3				
Delay (s)		33.7			20.9	20.8		18.6				
Level of Service		C			C	C		B				
Approach Delay (s)		33.7			20.9			18.6			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
307: S "K" Street & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	76	31	0	0	71	32	28	1625	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1785			4194				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4194				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	87	36	0	0	82	37	32	1868	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	12	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	107	0	0	1949	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	11%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.5			11.5			50.0				
Effective Green, g (s)		12.0			12.0			50.0				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		227			306			2996				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.09						0.46				
v/c Ratio		0.54			0.35			0.65				
Uniform Delay, d1		26.5			25.6			5.3				
Progression Factor		1.60			1.00			0.23				
Incremental Delay, d2		2.6			0.7			0.8				
Delay (s)		45.0			26.2			2.1				
Level of Service		D			C			A				
Approach Delay (s)		45.0			26.2			2.1			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	233	25	0	0	32	18	54	1799	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4201				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4201				
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)	248	27	0	0	34	19	57	1914	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	7	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	275	0	0	46	0	0	1991	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	11%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.4			20.4			39.6				
Effective Green, g (s)		20.9			20.9			41.1				
Actuated g/C Ratio		0.30			0.30			0.59				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		315			423			2467				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.47				
v/c Ratio		0.87			0.11			0.81				
Uniform Delay, d1		23.3			17.8			11.3				
Progression Factor		0.67			1.00			0.60				
Incremental Delay, d2		22.1			0.1			2.3				
Delay (s)		37.7			17.9			9.2				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.9			9.2			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1771	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1374			4202				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1374			4202				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	60	17	0	0	8	11	25	2012	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	10	0	0	2054	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	11%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		151			183			3164				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.49				
v/c Ratio		0.51			0.06			0.65				
Uniform Delay, d1		28.2			26.5			4.2				
Progression Factor		0.83			1.00			0.21				
Incremental Delay, d2		2.6			0.1			0.6				
Delay (s)		26.1			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		26.1			26.6			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	56	37	34	35	0	0	0	0	17	1478	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4196	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1185						4196	
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)	0	62	41	38	39	0	0	0	0	19	1642	40
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	80	0	0	77	0	0	0	0	0	1699	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	11%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.5			8.5						53.0	
Effective Green, g (s)		9.0			9.0						53.0	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		181			152						3177	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.06						0.40	
v/c Ratio		0.44			0.51						0.53	
Uniform Delay, d1		28.2			28.4						3.5	
Progression Factor		1.00			0.98						0.65	
Incremental Delay, d2		1.7			2.6						0.6	
Delay (s)		29.9			30.5						2.8	
Level of Service		C			C						A	
Approach Delay (s)		29.9			30.5			0.0			2.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	145	35	24	68	0	0	0	0	8	1337	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1451			1471						4149	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1451			1325						4149	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	158	38	26	74	0	0	0	0	9	1453	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	181	0	0	100	0	0	0	0	0	1540	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	12%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		13.9			13.9						46.1	
Effective Green, g (s)		14.4			14.4						47.6	
Actuated g/C Ratio		0.21			0.21						0.68	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		298			273						2821	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.08						0.37	
v/c Ratio		0.61			0.37						0.55	
Uniform Delay, d1		25.2			23.9						5.7	
Progression Factor		1.00			0.96						0.23	
Incremental Delay, d2		3.5			0.7						0.7	
Delay (s)		28.7			23.8						2.0	
Level of Service		C			C						A	
Approach Delay (s)		28.7			23.8			0.0			2.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1352	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1448			1471						4162	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1448			1339						4162	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	82	22	17	49	0	0	0	0	21	1470	27
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	87	0	0	66	0	0	0	0	0	1517	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	12%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.4			8.4						53.1	
Effective Green, g (s)		8.9			8.9						53.1	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		184			170						3157	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.36	
v/c Ratio		0.47			0.39						0.48	
Uniform Delay, d1		28.4			28.1						3.2	
Progression Factor		1.00			0.49						0.21	
Incremental Delay, d2		1.9			1.4						0.4	
Delay (s)		30.3			15.3						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.3			15.3			0.0			1.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	104	15	57	84	0	0	0	0	131	1215	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1831			1826						4319	
Flt Permitted		1.00			0.85						1.00	
Satd. Flow (perm)		1831			1577						4319	
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)	0	109	16	60	88	0	0	0	0	138	1279	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	117	0	0	148	0	0	0	0	0	1447	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	12%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		536			462						2561	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.33	
v/c Ratio		0.22			0.32						0.56	
Uniform Delay, d1		18.7			19.3						8.7	
Progression Factor		1.00			0.99						0.82	
Incremental Delay, d2		0.9			1.7						0.8	
Delay (s)		19.6			20.9						8.0	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.9			0.0			8.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	28	163	0	0	0	0	21	513	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.94	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1327						2302	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1327						2302	1400
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)	0	0	0	30	173	0	0	0	0	22	546	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	88	152
Lane Group Flow (vph)	0	0	0	0	203	0	0	0	0	0	863	279
Heavy Vehicles (%)	2%	2%	2%	64%	5%	2%	2%	2%	2%	0%	31%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					16.2						44.8	44.8
Effective Green, g (s)					16.7						45.3	45.3
Actuated g/C Ratio					0.24						0.65	0.65
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					317						1490	906
v/s Ratio Prot												
v/s Ratio Perm					0.15						0.37	0.20
v/c Ratio					0.64						0.58	0.31
Uniform Delay, d1					24.0						7.0	5.4
Progression Factor					0.83						0.86	0.27
Incremental Delay, d2					4.2						1.4	0.8
Delay (s)					24.2						7.4	2.2
Level of Service					C						A	A
Approach Delay (s)		0.0			24.2			0.0			5.8	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1109	22	0	0	0	0	0	0	19	502	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3112									2274	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3112									2274	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1275	25	0	0	0	0	0	0	22	577	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	1299	0	0	0	0	0	0	0	0	595	0
Heavy Vehicles (%)	0%	4%	10%	2%	2%	2%	2%	2%	2%	0%	36%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		36.1									24.9	
Effective Green, g (s)		36.6									25.4	
Actuated g/C Ratio		0.52									0.36	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1627									825	
v/s Ratio Prot		c0.42										
v/s Ratio Perm											0.26	
v/c Ratio		0.80									0.72	
Uniform Delay, d1		13.7									19.2	
Progression Factor		0.82									1.44	
Incremental Delay, d2		3.6									2.6	
Delay (s)		14.8									30.4	
Level of Service		B									C	
Approach Delay (s)		14.8			0.0			0.0			30.4	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1461	561	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1077			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1077			
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)	124	692	0	0	0	0	0	1538	591	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	804	0	0	0	0	0	1538	554	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	20%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		18.8						42.7	42.7			
Effective Green, g (s)		18.8						43.2	43.2			
Actuated g/C Ratio		0.27						0.62	0.62			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1229						1892	665			
v/s Ratio Prot								0.50				
v/s Ratio Perm		0.18							c0.51			
v/c Ratio		0.65						0.81	0.83			
Uniform Delay, d1		22.7						10.3	10.6			
Progression Factor		0.87						1.78	1.91			
Incremental Delay, d2		1.2						3.2	9.6			
Delay (s)		21.0						21.5	29.8			
Level of Service		C						C	C			
Approach Delay (s)		21.0			0.0			23.8			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	717	411	76	1407	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.95			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3047			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3047			2943				
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)	0	0	0	0	739	424	78	1451	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1145	0	0	1523	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	16%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					24.0			37.0				
Effective Green, g (s)					24.5			37.5				
Actuated g/C Ratio					0.35			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1066			1577				
v/s Ratio Prot					c0.38							
v/s Ratio Perm								0.52				
v/c Ratio					1.07			0.97				
Uniform Delay, d1					22.8			15.6				
Progression Factor					1.00			0.75				
Incremental Delay, d2					49.7			11.1				
Delay (s)					72.4			22.8				
Level of Service					E			C				
Approach Delay (s)		0.0			72.4			22.8			0.0	
Approach LOS		A			E			C			A	

Intersection Summary			
HCM Average Control Delay	44.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1282	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2948									4180	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4180	
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)	0	290	45	0	0	0	0	0	0	394	1378	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	50	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1722	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	12%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.7									48.3	
Effective Green, g (s)		13.2									48.8	
Actuated g/C Ratio		0.19									0.70	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		556									2914	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.41	
v/c Ratio		0.56									0.59	
Uniform Delay, d1		25.8									5.5	
Progression Factor		1.00									0.76	
Incremental Delay, d2		1.3									0.7	
Delay (s)		27.1									4.9	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			4.9	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	488	296	0	0	0	0	0	1272	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.98						1.00	
Satd. Flow (prot)				1068	3014						4415	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1068	3014						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	530	322	0	0	0	0	0	1383	68
RTOR Reduction (vph)	0	0	0	23	23	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	0	0	258	548	0	0	0	0	0	1444	0
Heavy Vehicles (%)	2%	2%	2%	23%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				20.7	20.7						40.3	
Effective Green, g (s)				21.2	21.2						40.8	
Actuated g/C Ratio				0.30	0.30						0.58	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				323	913						2573	
v/s Ratio Prot				c0.24	0.18						c0.33	
v/s Ratio Perm												
v/c Ratio				0.80	0.60						0.56	
Uniform Delay, d1				22.4	20.8						9.1	
Progression Factor				0.96	1.04						1.00	
Incremental Delay, d2				1.3	0.1						0.9	
Delay (s)				22.8	21.8						9.9	
Level of Service				C	C						A	
Approach Delay (s)		0.0			22.1			0.0			9.9	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.7%	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)	11	1238	36	28	1027	2	349	8	18	17	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.98	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3311		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3125		1727	3311		1681	1672			1762	
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)	13	1456	42	33	1208	2	411	9	21	20	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1510	0	33	1210	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	9%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.3		5.4	80.7		17.3	17.3			5.0	
Effective Green, g (s)		72.3		5.4	81.7		18.3	18.3			6.0	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1915		79	2292		261	259			90	
v/s Ratio Prot				0.02	c0.37		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.53		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.8		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.56		1.00	1.00			1.00	
Incremental Delay, d2		3.4		2.8	0.7		22.4	19.9			1.7	
Delay (s)		20.5		59.5	5.6		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.5			7.0			69.6			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1575	102	53	1079	0	215	8	109	51	19	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3312		1727	3312		1665	1552			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3312		1727	3312		1665	1552			1751	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	1641	106	55	1124	0	224	8	114	53	20	25
RTOR Reduction (vph)	0	3	0	0	0	0	0	66	0	0	13	0
Lane Group Flow (vph)	26	1744	0	55	1124	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	9%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.3		7.6	66.3		14.5	14.5			11.6	
Effective Green, g (s)	6.6	66.3		7.6	67.3		15.5	15.5			12.6	
Actuated g/C Ratio	0.06	0.56		0.06	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1861		111	1889		219	204			187	
v/s Ratio Prot	0.02	c0.53		0.03	c0.34		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.27	0.94		0.50	0.60		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.9		53.3	16.5		49.9	47.6			49.5	
Progression Factor	0.78	0.60		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	8.6		2.5	1.4		21.0	2.2			2.1	
Delay (s)	42.3	22.9		55.9	17.9		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		23.2			19.6			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	963	3	516	903	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.93	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3176		3002	1491		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3176		3002	1491		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1189	4	637	1115	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1193	0	1195	557	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	16%	7%	7%	16%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	39.2		40.5	91.7		40.5
Effective Green, g (s)	41.2		42.5	91.7		42.5
Actuated g/C Ratio	0.45		0.46	1.00		0.46
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1427		1391	1491		1231
v/s Ratio Prot	c0.38		c0.40	0.37		0.14
v/s Ratio Perm						
v/c Ratio	0.84		0.86	0.37		0.31
Uniform Delay, d1	22.3		21.9	0.0		15.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	4.3		5.4	0.7		0.1
Delay (s)	26.6		27.4	0.7		15.5
Level of Service	C		C	A		B
Approach Delay (s)	26.6		18.9		15.5	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	91.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	20	0	0	8	19	635	1	3	340	55
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	21	0	0	8	20	668	1	3	358	58
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1117	1110	394	1096	1138	671	422			670		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1117	1110	394	1096	1138	671	422			670		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	178	205	655	182	197	459	1136			919		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	676	3	416
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	655	459	1136	1136	919	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.24
Queue Length 95th (ft)	2	1	1	1	0	0
Control Delay (s)	10.7	13.0	8.2	0.3	8.9	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.0	0.5		0.1	
Approach LOS	B	B				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	24	1	10	0	2	4	14	590	2	2	292	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	26	1	11	0	2	4	15	634	2	2	314	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1004	1001	330	995	1015	635	345			637		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1004	1001	330	995	1015	635	345			637		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	98	100	99	99	99			100		
cM capacity (veh/h)	216	240	714	218	236	480	1219			947		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	637	2	345
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	270	357	1219	1700	947	1700
Volume to Capacity	0.14	0.02	0.01	0.37	0.00	0.20
Queue Length 95th (ft)	12	1	1	0	0	0
Control Delay (s)	20.5	15.3	8.0	0.0	8.8	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	20.5	15.3	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	2	393	2	2	222	164
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	2	452	2	2	255	189
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	818	813	349	721	906	453	444			454		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	818	813	349	721	906	453	444			454		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	92	100	100	100	98	99	100			100		
cM capacity (veh/h)	289	314	698	329	266	589	1127			1117		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	454	2	444
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	189
cSH	314	351	1127	1700	1117	1700
Volume to Capacity	0.08	0.03	0.00	0.27	0.00	0.26
Queue Length 95th (ft)	7	2	0	0	0	0
Control Delay (s)	17.5	15.6	8.2	0.0	8.2	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	17.5	15.6	0.0		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	370	30	0	0	0	1	82	1	2	227	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	389	32	0	0	0	1	86	1	2	239	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			421			539	405	405	449	421	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			421			539	405	405	449	421	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	84	100	100	54	99
cM capacity (veh/h)	1604			1149			288	536	648	455	524	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	421	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	532	539
Volume to Capacity	0.00	0.00	0.17	0.47
Queue Length 95th (ft)	0	0	15	63
Control Delay (s)	0.0	0.0	13.1	17.6
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.1	17.6
Approach LOS			B	C

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	573	8	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	599	1	3	616	9	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1222	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1222	599
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		95	99
cM capacity (veh/h)			948		159	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	619	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	181
Volume to Capacity	0.35	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	26.1
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	26.1
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	550	0	2	598	10	0	1	0	8	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	598	0	2	650	11	0	1	0	9	2	8
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			601			1288	1284	603	1279	1279	657
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			601			1288	1284	603	1279	1279	657
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	94	99	98
cM capacity (veh/h)	912			959			136	164	500	138	161	457

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	663	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	912	959	164	198
Volume to Capacity	0.01	0.00	0.01	0.09
Queue Length 95th (ft)	1	0	1	8
Control Delay (s)	0.3	0.1	27.1	25.1
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	27.1	25.1
Approach LOS			D	D

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	553	1	1	593	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	601	1	1	645	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	646			602			1252	1252	602	1252	1252	645
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	646			602			1252	1252	602	1252	1252	645
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	99	100	100
cM capacity (veh/h)	925			961			148	172	500	148	172	472

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	603	647	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	925	961	229	226
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	20.9	21.1
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	20.9	21.1
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	468	34	186	468	11	76	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	514	37	204	514	12	84	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			552			1599	1571	535	1570	1584	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			552			1599	1571	535	1570	1584	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			70			0	97	100	71	98	94
cM capacity (veh/h)	1021			691			60	75	548	65	72	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	602	731	88	54
Volume Left	51	204	84	19
Volume Right	37	12	2	34
cSH	1021	691	61	147
Volume to Capacity	0.05	0.30	1.43	0.37
Queue Length 95th (ft)	4	31	191	38
Control Delay (s)	1.3	7.3	379.5	43.0
Lane LOS	A	A	F	E
Approach Delay (s)	1.3	7.3	379.5	43.0
Approach LOS			F	E

Intersection Summary			
Average Delay	28.3		
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
354: W Wishkah Street & S Garfield St

8/17/2009

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	487	0	0	27	664
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	529	0	0	29	722
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			780	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			780	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			357	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	529	29	722
Volume Left	0	29	0
Volume Right	529	0	0
cSH	1700	1578	1700
Volume to Capacity	0.31	0.02	0.42
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	500	5	0	354	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	549	5	0	389	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1102	1102	1104	0
vC1, stage 1 conf vol			1102	1102	0	
vC2, stage 2 conf vol			0	0	1104	
vCu, unblocked vol	0		1102	1102	1104	0
tC, single (s)	4.2		7.1	6.8	6.5	6.2
tC, 2 stage (s)			6.1	5.8	5.5	
tF (s)	2.3		3.5	4.3	4.0	3.3
p0 queue free %	65		100	0	100	100
cM capacity (veh/h)	1585		152	143	168	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	366	189	389
Volume Left	366	183	0
Volume Right	0	5	0
cSH	1585	1585	143
Volume to Capacity	0.35	0.35	2.73
Queue Length 95th (ft)	39	39	874
Control Delay (s)	8.5	8.3	846.0
Lane LOS	A	A	F
Approach Delay (s)	8.4		846.0
Approach LOS			F

Intersection Summary			
Average Delay	353.6		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	21	3	0	0	169	7	12	830	20	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	3	0	0	192	8	14	943	23	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	603	993	0	984	982	483	0			966		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	603	993	0	984	982	483	0			966		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	99	100	100	22	99	99			100		
cM capacity (veh/h)	136	245	1091	201	247	532	1600			709		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	485	494
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	144	253	1600	1700
Volume to Capacity	0.19	0.79	0.01	0.29
Queue Length 95th (ft)	17	149	1	0
Control Delay (s)	35.6	57.6	0.3	0.0
Lane LOS	E	F	A	
Approach Delay (s)	35.6	57.6	0.1	
Approach LOS	E	F		

Intersection Summary				
Average Delay		10.5		
Intersection Capacity Utilization		46.6%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	6	0	0	16	2	5	844	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	6	0	0	17	2	5	879	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	460	895	2	897	892	442	0			884		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460	895	2	897	892	442	0			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	94	100	100			100		
cM capacity (veh/h)	464	281	1086	233	282	569	1593			761		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	445	445
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	357	299	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.26
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	15.5	17.8	0.1	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.5	17.8	0.1	
Approach LOS	C	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	31	797	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	105	9	36	927	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	600	1013	4	1011	1009	471	3			938		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600	1013	4	1011	1009	471	3			938		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	94	97	100	100	49	98	98			100		
cM capacity (veh/h)	200	204	1019	162	205	492	1592			724		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	499	470
Volume Left	12	0	36	0
Volume Right	0	9	0	7
cSH	202	215	1592	1700
Volume to Capacity	0.09	0.53	0.02	0.28
Queue Length 95th (ft)	8	69	2	0
Control Delay (s)	24.7	39.2	0.7	0.0
Lane LOS	C	E	A	
Approach Delay (s)	24.7	39.2	0.4	
Approach LOS	C	E		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
359: N Washington Street & W Wishkah Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	34	0	0	0	0	3	509	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	4	100	40	0	0	0	0	4	606	10
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.88	0.88	0.88	0.88	0.88		0.88					
vC, conflicting volume	641	628	311	328	633	7	618			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	308	293	0	0	299	7	283			7		
tC, single (s)	7.8	6.8	7.2	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.4	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	92	100	100			100		
cM capacity (veh/h)	481	510	912	853	527	1055	1116			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	140	307	312
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	559	724	1541	1700
Volume to Capacity	0.03	0.19	0.00	0.18
Queue Length 95th (ft)	2	18	0	0
Control Delay (s)	11.7	11.2	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.7	11.2	0.1	
Approach LOS	B	B		

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
360: N Lincoln Street & W Wishkah Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	570	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	613	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	650	642	315	340	648	4	626			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	642	315	340	648	4	626			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	347	392	687	575	389	1080	952			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	317	319
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	418	481	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.9	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.9	13.0	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		35.1%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	525	65	0	30	1	121	41	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	559	69	0	32	1	129	44	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	628			0			643	621	316	326	655	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628			0			643	621	316	326	655	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	77	89	100
cM capacity (veh/h)	950			1565			329	403	686	565	383	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	293	348	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	408	504
Volume to Capacity	0.01	0.20	0.08	0.34
Queue Length 95th (ft)	1	0	7	38
Control Delay (s)	0.4	0.0	14.6	15.8
Lane LOS	A		B	C
Approach Delay (s)	0.2		14.6	15.8
Approach LOS			B	C

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	176	70	338	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	191	76	367	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	240			29			165	174	145	349	261	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240			29			165	174	145	349	261	21
tC, single (s)	4.1			4.1			7.1	6.8	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.3	3.3	3.6	4.1	3.4
p0 queue free %	100			100			91	45	100	98	100	100
cM capacity (veh/h)	1326			1584			804	664	908	334	634	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	240	443	5
Volume Left	0	0	76	5
Volume Right	17	191	0	0
cSH	1326	1584	684	334
Volume to Capacity	0.00	0.00	0.65	0.02
Queue Length 95th (ft)	0	0	119	1
Control Delay (s)	0.0	0.0	19.4	16.0
Lane LOS			C	C
Approach Delay (s)	0.0	0.0	19.4	16.0
Approach LOS			C	C

Intersection Summary			
Average Delay	12.1		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	80	220	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	87	239	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	329	240	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	329	240	240			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	665	799	1338			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	88	240
Volume Left	1	1	0
Volume Right	1	0	1
cSH	726	1338	1700
Volume to Capacity	0.00	0.00	0.14
Queue Length 95th (ft)	0	0	0
Control Delay (s)	10.0	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	10.0	0.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
371: Port Industrial Road & W 1st Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	507	6	16	3	5	5	0	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	39	452	5	5	583	7	18	3	6	6	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	583			456			1172	1124	454	1133	1130	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			456			1172	1124	454	1133	1130	586
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			87	98	99	96	100	90
cM capacity (veh/h)	949			1115			141	189	588	163	187	494

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	590	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	949	1700	1115	1700	174	406
Volume to Capacity	0.04	0.27	0.00	0.35	0.16	0.13
Queue Length 95th (ft)	3	0	0	0	14	11
Control Delay (s)	9.0	0.0	8.2	0.0	29.5	15.2
Lane LOS	A		A		D	C
Approach Delay (s)	0.7		0.1		29.5	15.2
Approach LOS					D	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	446	110	8	14	38	52	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	361	11	16	485	120	9	15	41	57	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	604			372			1013	1040	366	1029	986	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	604			372			1013	1040	366	1029	986	545
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			95	93	94	69	97	95
cM capacity (veh/h)	936			1144			186	212	653	184	240	541

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	621	65	92
Volume Left	18	16	9	57
Volume Right	11	120	41	29
cSH	936	1144	359	237
Volume to Capacity	0.02	0.01	0.18	0.39
Queue Length 95th (ft)	2	1	16	44
Control Delay (s)	0.6	0.4	17.2	29.5
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	17.2	29.5
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	288	2	4	0	339	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	324	2	4	0	381	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381			326			356	737	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			326			356	737	325	406	357	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	89	95	100	100	100
cM capacity (veh/h)	1151			596			591	340	716	481	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	381	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	381	33
cSH	1151	1700	596	1700	453
Volume to Capacity	0.01	0.19	0.01	0.22	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.2	0.0	11.1	0.0	14.4
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.1		14.4
Approach LOS					B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/17/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	39	0	2	0	0	0	31	50	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	0	2	0	0	0	36	59	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		112	94	0	170	93	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		112	94	0	170	93	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	95	100	95	100
cM capacity (veh/h)	1554			1620		809	767	1076	711	777	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	48	0	95	40
Volume Left	46	0	0	2
Volume Right	2	0	59	0
cSH	1554	1700	932	773
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	332	4	15	450	31	10	7	24	32	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1770			1844			1759	1538		1747	
Flt Permitted		0.98			0.99			0.79	1.00		0.80	
Satd. Flow (perm)		1744			1824			1429	1538		1446	
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)	12	357	4	16	484	33	11	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	373	0	0	531	0	0	19	3	0	44	0
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		24.1			24.1			4.3	4.3		4.3	
Effective Green, g (s)		24.6			24.6			4.8	4.8		4.8	
Actuated g/C Ratio		0.66			0.66			0.13	0.13		0.13	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1147			1200			183	197		186	
v/s Ratio Prot												
v/s Ratio Perm		0.21			c0.29			0.01	0.00		c0.03	
v/c Ratio		0.32			0.44			0.10	0.02		0.24	
Uniform Delay, d1		2.8			3.1			14.4	14.2		14.7	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.3	0.0		0.7	
Delay (s)		3.0			3.4			14.7	14.3		15.3	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.0			3.4			14.4			15.3	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	37.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	2	262	19	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	203	17	2	298	22	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			220		506	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					302	
vCu, unblocked vol			220		506	203
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		97	100
cM capacity (veh/h)			1355		655	808

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	2	298	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1355	1700	672
Volume to Capacity	0.12	0.01	0.00	0.18	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.6
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.6
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	1207	11	0	0	0	0	55	24	16	81	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3343						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3343						3240			3066	
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)	128	1298	12	0	0	0	0	59	26	17	87	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1438	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2622						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.43									c0.03	
v/c Ratio		0.55						0.19			0.33	
Uniform Delay, d1		2.9						28.8			29.3	
Progression Factor		1.00						1.00			0.60	
Incremental Delay, d2		0.8						0.3			0.6	
Delay (s)		3.7						29.1			18.1	
Level of Service		A						C			B	
Approach Delay (s)		3.7			0.0			29.1			18.1	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1180	64	0	0	0	0	80	121	77	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3335						1711			1621	
Flt Permitted		1.00						1.00			0.73	
Satd. Flow (perm)		3335						1711			1204	
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)	18	1388	75	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	1477	0	0	0	0	0	211	0	0	187	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		30.4						14.8			14.8	
Effective Green, g (s)		30.4						14.8			14.8	
Actuated g/C Ratio		0.57						0.28			0.28	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1906						476			335	
v/s Ratio Prot								0.12				
v/s Ratio Perm		0.44									c0.16	
v/c Ratio		0.77						0.44			0.56	
Uniform Delay, d1		8.8						15.8			16.4	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.0						0.7			2.0	
Delay (s)		10.7						16.5			18.4	
Level of Service		B						B			B	
Approach Delay (s)		10.7			0.0			16.5			18.4	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	53.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1167	18	0	0	0	0	25	24	25	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3351						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3351						1597			1355	
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)	23	1203	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1244	0	0	0	0	0	29	0	0	55	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		30.8						4.5			4.5	
Effective Green, g (s)		31.3						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2368						180			153	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.37									c0.04	
v/c Ratio		0.53						0.16			0.36	
Uniform Delay, d1		3.0						17.8			18.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.4			1.4	
Delay (s)		3.2						18.2			19.6	
Level of Service		A						B			B	
Approach Delay (s)		3.2			0.0			18.2			19.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	44.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.7%	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 (veh/h)	47	1191	19	0	0	0	0	31	36	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	48	1228	20	0	0	0	0	32	37	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1247			1358	1335	624	764	1344	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1247			1358	1335	624	764	1344	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	78	91	79	69	100
cM capacity (veh/h)	1607			554			79	147	426	220	148	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	662	634	69	92
Volume Left	48	0	0	45
Volume Right	0	20	37	0
cSH	1607	1700	226	177
Volume to Capacity	0.03	0.37	0.31	0.52
Queue Length 95th (ft)	2	0	31	65
Control Delay (s)	0.9	0.0	27.7	45.4
Lane LOS	A		D	E
Approach Delay (s)	0.4		27.7	45.4
Approach LOS			D	E

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	859	12	0	0	0	0	415	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3323						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	934	13	0	0	0	0	451	9	0	0	0
RTOR Reduction (vph)	54	2	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	54	945	0	0	0	0	0	458	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	19.0	19.0						11.1				
Effective Green, g (s)	20.0	20.0						12.1				
Actuated g/C Ratio	0.50	0.50						0.30				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	874	1657						1054				
v/s Ratio Prot		c0.28						c0.13				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.57						0.43				
Uniform Delay, d1	5.2	7.0						11.3				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.5						0.3				
Delay (s)	5.2	7.5						11.5				
Level of Service	A	A						B				
Approach Delay (s)		7.3			0.0			11.5			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1076	70	0	0	0	0	27	171	41	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1575	1504		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.75	
Satd. Flow (perm)		2893	1300					1575	1504		1393	
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)	18	1157	75	0	0	0	0	29	184	44	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	47	47	0	0	0
Lane Group Flow (vph)	0	1175	66	0	0	0	0	61	58	0	78	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.2	53.2					7.8	7.8		7.8	
Effective Green, g (s)		53.7	53.7					8.3	8.3		8.3	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2219	997					187	178		165	
v/s Ratio Prot		c0.41						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.53	0.07					0.33	0.33		0.47	
Uniform Delay, d1		3.2	2.0					28.3	28.3		28.8	
Progression Factor		0.31	0.29					1.00	1.00		1.00	
Incremental Delay, d2		0.8	0.1					1.0	1.1		2.1	
Delay (s)		1.8	0.7					29.3	29.4		30.9	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.7			0.0			29.3			30.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1047	24	0	0	0	0	12	86	7	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2882						1314			1462	
Flt Permitted		1.00						1.00			0.87	
Satd. Flow (perm)		2882						1314			1291	
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)	24	1102	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	56	0	0	0	0
Lane Group Flow (vph)	0	1150	0	0	0	0	0	48	0	0	18	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.8						7.2			7.2	
Effective Green, g (s)		54.8						7.2			7.2	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2256						135			133	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.40									0.01	
v/c Ratio		0.51						0.36			0.14	
Uniform Delay, d1		2.7						29.2			28.6	
Progression Factor		0.39						1.00			1.00	
Incremental Delay, d2		0.6						1.6			0.5	
Delay (s)		1.7						30.9			29.0	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			30.9			29.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	906	16	0	0	0	0	0	29	289	216	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2887							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2887							1289	1681	1405	
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)	0	954	17	0	0	0	0	0	31	304	227	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	178	9	0
Lane Group Flow (vph)	0	969	0	0	0	0	0	0	4	83	261	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		28.6							9.5	18.4	18.4	
Effective Green, g (s)		29.1							10.0	18.9	18.9	
Actuated g/C Ratio		0.42							0.14	0.27	0.27	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1200							184	454	379	
v/s Ratio Prot		c0.34							c0.00	0.05	c0.19	
v/s Ratio Perm												
v/c Ratio		0.81							0.02	0.18	0.69	
Uniform Delay, d1		18.0							25.8	19.6	22.9	
Progression Factor		1.09							1.00	1.00	1.00	
Incremental Delay, d2		5.5							0.2	0.9	9.8	
Delay (s)		25.1							26.0	20.5	32.7	
Level of Service		C							C	C	C	
Approach Delay (s)		25.1			0.0			26.0			26.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	25.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	383	12	0	0	0	0	45	25	460	47	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2879						1418		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2879						1418		1681	1360	
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)	7	407	13	0	0	0	0	48	27	489	50	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	424	0	0	0	0	0	51	0	269	270	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		17.6						6.9		32.0	32.0	
Effective Green, g (s)		18.1						7.4		32.5	32.5	
Actuated g/C Ratio		0.26						0.11		0.46	0.46	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		744						150		780	631	
v/s Ratio Prot								c0.04		0.16	c0.20	
v/s Ratio Perm		0.15										
v/c Ratio		0.57						0.34		0.34	0.43	
Uniform Delay, d1		22.6						29.0		12.0	12.5	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.0						1.3		1.2	2.1	
Delay (s)		23.6						30.4		13.2	14.7	
Level of Service		C						C		B	B	
Approach Delay (s)		23.6			0.0			30.4			13.9	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	309	0	517	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1791		2111		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1791		2111		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	343	0	574	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	343	0	574	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		29.3		29.3		
Effective Green, g (s)		29.3		29.3		
Actuated g/C Ratio		0.74		0.74		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1332		1570		
v/s Ratio Prot		0.19		c0.27		
v/s Ratio Perm						
v/c Ratio		0.26		0.37		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.1		
Delay (s)		1.7		1.9		
Level of Service		A		A		
Approach Delay (s)	1.7			1.9	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	39.4	Sum of lost time (s)	10.1
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	894	22	18	163	0	0	90	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3490			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3490			3041			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	931	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	78	0
Lane Group Flow (vph)	0	0	0	0	967	0	0	189	0	0	269	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					49.1			11.9			11.9	
Effective Green, g (s)					49.6			12.4			12.4	
Actuated g/C Ratio					0.71			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2473			539			531	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.28			0.06				
v/c Ratio					0.39			0.35			0.51	
Uniform Delay, d1					4.1			25.3			26.0	
Progression Factor					1.47			1.04			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					6.5			26.6			26.8	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.5			26.6			26.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1196	19	13	381	0	0	51	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
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3353			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3353			1679			1710	1615
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)	0	0	0	15	1272	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	50
Lane Group Flow (vph)	0	0	0	0	1305	0	0	419	0	0	54	240
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2060			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.39			c0.25				0.15
v/c Ratio					0.63			0.92			0.12	0.55
Uniform Delay, d1					8.5			24.8			19.2	21.8
Progression Factor					0.61			1.00			1.00	1.00
Incremental Delay, d2					1.4			26.1			0.5	4.9
Delay (s)					6.6			50.8			19.7	26.7
Level of Service					A			D			B	C
Approach Delay (s)		0.0			6.6			50.8			25.6	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	70.0	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)	0	0	0	44	1120	92	32	68	0	0	211	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3567	1554		1815			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3567	1554		1551			1794	
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)	0	0	0	46	1179	97	34	72	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1225	54	0	106	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					29.0	29.0		14.7			14.7	
Effective Green, g (s)					29.0	29.0		14.7			14.7	
Actuated g/C Ratio					0.56	0.56		0.28			0.28	
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)					2001	872		441			510	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.34	0.04		0.07				
v/c Ratio					0.61	0.06		0.24			0.59	
Uniform Delay, d1					7.6	5.2		14.2			15.9	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.3			1.7	
Delay (s)					8.2	5.2		14.5			17.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			7.9			14.5			17.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	51.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1280	5	18	7	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.96			1.00	
Satd. Flow (prot)					3324			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3324			1676			1777	
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)	0	0	0	35	1362	5	19	7	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1402	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.9			1.3			1.3	
Effective Green, g (s)					30.4			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2514			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.42			c0.02				
v/c Ratio					0.56			0.35			0.29	
Uniform Delay, d1					2.1			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			2.8			2.0	
Delay (s)					2.3			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.3			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	42	1171	12	52	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	46	1287	13	57	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1300			0			758	1392	0	1393	1386	650
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1300			0			758	1392	0	1393	1386	650
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			77	90	100	100	86	97
cM capacity (veh/h)	529			1622			251	137	1084	93	140	417

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	690	657	71	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	215	188
Volume to Capacity	0.03	0.39	0.33	0.17
Queue Length 95th (ft)	2	0	35	15
Control Delay (s)	0.8	0.0	29.8	28.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		29.8	28.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1159	2	471	23	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3361		1618	1630				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1618	1630				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1302	2	529	26	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	158	158	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1304	0	117	122	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					26.4		10.0	10.0				0.6
Effective Green, g (s)					27.4		11.0	11.0				1.6
Actuated g/C Ratio					0.53		0.21	0.21				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1771		342	345				50
v/s Ratio Prot					c0.39							
v/s Ratio Perm							0.07	0.08				c0.00
v/c Ratio					0.74		0.34	0.35				0.00
Uniform Delay, d1					9.5		17.4	17.5				24.4
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.6		0.6	0.6				0.0
Delay (s)					11.1		18.0	18.1				24.5
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.1			18.1			24.5	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1222	184	0	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1286	194	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1286				1286	643
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1286				1286	643
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	78
cM capacity (veh/h)	535				153	411

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	643	643	194	89
Volume Left	0	0	0	0
Volume Right	0	0	194	89
cSH	1700	1700	1700	411
Volume to Capacity	0.38	0.38	0.11	0.22
Queue Length 95th (ft)	0	0	0	20
Control Delay (s)	0.0	0.0	0.0	16.2
Lane LOS				C
Approach Delay (s)	0.0			16.2
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	474	1066	0	0	8	98	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	489	1099	0	0	8	101	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			489	489	489	1588	1588	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			489	489	489	1588	1588	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	6	100	
cM capacity (veh/h)			480	579	490	108	413	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	855	733	8	101
Volume Left	0	0	8	0
Volume Right	366	733	0	0
cSH	1700	1700	490	108
Volume to Capacity	0.50	0.43	0.02	0.94
Queue Length 95th (ft)	0	0	1	144
Control Delay (s)	0.0	0.0	12.5	143.6
Lane LOS			B	F
Approach Delay (s)	0.0		133.7	
Approach LOS			F	

Intersection Summary			
Average Delay	8.6		
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	52	0	0	1186	0	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	0	0	1289	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	0	0	1289	0	508
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.3			46.7		69.0
Effective Green, g (s)	13.8			47.2		69.0
Actuated g/C Ratio	0.20			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	354			2398		2787
v/s Ratio Prot	0.03			c0.37		
v/s Ratio Perm						c0.18
v/c Ratio	0.16			0.54		0.18
Uniform Delay, d1	22.8			5.4		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.8		0.1
Delay (s)	22.9			6.3		0.1
Level of Service	C			A		A
Approach Delay (s)	22.9			6.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	609	577	467	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1694	1845	3467	
Flt Permitted			0.39	1.00	1.00	
Satd. Flow (perm)			695	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	634	601	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	634	601	518	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			49.8	54.3	25.2	
Effective Green, g (s)			50.8	54.8	25.7	
Actuated g/C Ratio			0.74	0.79	0.37	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			875	1465	1291	
v/s Ratio Prot			c0.26	0.33	0.15	
v/s Ratio Perm			c0.27			
v/c Ratio			0.72	0.41	0.40	
Uniform Delay, d1			4.3	2.2	16.0	
Progression Factor			0.45	0.08	1.00	
Incremental Delay, d2			2.2	0.7	0.1	
Delay (s)			4.2	0.9	16.1	
Level of Service			A	A	B	
Approach Delay (s)	0.0			2.6	16.1	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	947	218	0	0	0	21	0	646	143	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.97				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2449				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2449				
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)	1018	234	0	0	0	23	0	695	154	0	0	0
RTOR Reduction (vph)	355	91	0	0	0	22	0	19	0	0	0	0
Lane Group Flow (vph)	266	540	0	0	0	1	0	830	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	23%	17%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	24.2	24.2				2.5		31.3				
Effective Green, g (s)	24.7	24.7				1.5		31.8				
Actuated g/C Ratio	0.35	0.35				0.02		0.45				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	571	587				27		1113				
v/s Ratio Prot								c0.34				
v/s Ratio Perm	0.16	0.33				c0.00						
v/c Ratio	0.47	0.92				0.05		0.75				
Uniform Delay, d1	17.5	21.7				33.6		15.8				
Progression Factor	1.22	0.33				1.00		1.00				
Incremental Delay, d2	1.5	13.8				0.3		2.8				
Delay (s)	22.9	21.0				33.9		18.5				
Level of Service	C	C				C		B				
Approach Delay (s)		22.0			33.9			18.5			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	21	0	0	158	18	95	1527	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1631			4632				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1269			1631			4632				
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)	17	22	0	0	166	19	100	1607	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	179	0	0	1713	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	16%	5%	38%	10%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		13.1			13.1			47.9				
Effective Green, g (s)		13.6			13.6			48.4				
Actuated g/C Ratio		0.19			0.19			0.69				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		247			317			3203				
v/s Ratio Prot					c0.11							
v/s Ratio Perm		0.03						0.37				
v/c Ratio		0.16			0.57			0.53				
Uniform Delay, d1		23.4			25.5			5.3				
Progression Factor		1.06			1.00			0.99				
Incremental Delay, d2		0.3			2.3			0.4				
Delay (s)		25.0			27.8			5.7				
Level of Service		C			C			A				
Approach Delay (s)		25.0			27.8			5.7			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	64	1579	96	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1712	1504		4412				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4412				
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)	95	152	0	0	86	120	67	1662	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	18	0	8	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	78	0	1822	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	9%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.3			17.3	17.3		44.2				
Effective Green, g (s)		17.8			17.8	17.8		44.2				
Actuated g/C Ratio		0.25			0.25	0.25		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		316			435	382		2786				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.41				
v/c Ratio		0.78			0.22	0.20		0.65				
Uniform Delay, d1		24.3			20.6	20.5		8.1				
Progression Factor		0.94			1.00	1.00		2.07				
Incremental Delay, d2		11.1			0.3	0.3		1.1				
Delay (s)		34.0			20.9	20.8		17.9				
Level of Service		C			C	C		B				
Approach Delay (s)		34.0			20.8			17.9			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	19.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
307: S "K" Street & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	76	31	0	0	71	32	28	1575	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1785			4230				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4230				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	87	36	0	0	82	37	32	1810	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	14	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	105	0	0	1891	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	10%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.5			11.5			50.0				
Effective Green, g (s)		12.0			12.0			50.0				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		227			306			3021				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.09						0.45				
v/c Ratio		0.54			0.34			0.63				
Uniform Delay, d1		26.5			25.5			5.2				
Progression Factor		1.60			1.00			0.24				
Incremental Delay, d2		2.6			0.7			0.8				
Delay (s)		45.1			26.2			2.0				
Level of Service		D			C			A				
Approach Delay (s)		45.1			26.2			2.0			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	233	25	0	0	32	18	54	1749	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4275				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4275				
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)	248	27	0	0	34	19	57	1861	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	8	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	275	0	0	45	0	0	1938	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	9%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.4			20.4			39.6				
Effective Green, g (s)		20.9			20.9			41.1				
Actuated g/C Ratio		0.30			0.30			0.59				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		315			423			2510				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.45				
v/c Ratio		0.87			0.11			0.77				
Uniform Delay, d1		23.3			17.8			10.9				
Progression Factor		0.67			1.00			0.62				
Incremental Delay, d2		22.1			0.1			1.9				
Delay (s)		37.7			17.9			8.7				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.9			8.7			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1721	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1374			4277				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1374			4277				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	60	17	0	0	8	11	25	1956	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	9	0	0	1998	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	9%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		151			183			3220				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.47				
v/c Ratio		0.51			0.05			0.62				
Uniform Delay, d1		28.2			26.5			4.0				
Progression Factor		0.82			1.00			0.23				
Incremental Delay, d2		2.6			0.1			0.6				
Delay (s)		25.9			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		25.9			26.6			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	56	37	34	35	0	0	0	0	17	1428	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4270	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1185						4270	
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)	0	62	41	38	39	0	0	0	0	19	1587	40
RTOR Reduction (vph)	0	25	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	78	0	0	77	0	0	0	0	0	1644	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	9%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.5			8.5						53.0	
Effective Green, g (s)		9.0			9.0						53.0	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		181			152						3233	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.06						0.38	
v/c Ratio		0.43			0.51						0.51	
Uniform Delay, d1		28.1			28.4						3.4	
Progression Factor		1.00			0.97						0.66	
Incremental Delay, d2		1.6			2.6						0.5	
Delay (s)		29.8			30.2						2.7	
Level of Service		C			C						A	
Approach Delay (s)		29.8			30.2			0.0			2.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	145	35	24	68	0	0	0	0	8	1287	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1451			1471						4219	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1451			1325						4219	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	158	38	26	74	0	0	0	0	9	1399	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	100	0	0	0	0	0	1485	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	10%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		13.9			13.9						46.1	
Effective Green, g (s)		14.4			14.4						47.6	
Actuated g/C Ratio		0.21			0.21						0.68	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		298			273						2869	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.08						0.35	
v/c Ratio		0.61			0.37						0.52	
Uniform Delay, d1		25.2			23.9						5.5	
Progression Factor		1.00			0.97						0.24	
Incremental Delay, d2		3.5			0.7						0.6	
Delay (s)		28.7			23.9						1.9	
Level of Service		C			C						A	
Approach Delay (s)		28.7			23.9			0.0			1.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1302	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1448			1471						4235	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1448			1339						4235	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	82	22	17	49	0	0	0	0	21	1415	27
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	87	0	0	66	0	0	0	0	0	1461	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	10%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.4			8.4						53.1	
Effective Green, g (s)		8.9			8.9						53.1	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		184			170						3213	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.35	
v/c Ratio		0.47			0.39						0.45	
Uniform Delay, d1		28.4			28.1						3.1	
Progression Factor		1.00			0.51						0.22	
Incremental Delay, d2		1.9			1.4						0.4	
Delay (s)		30.3			15.7						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.3			15.7			0.0			1.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	104	15	57	84	0	0	0	0	131	1165	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1831			1826						4388	
Flt Permitted		1.00			0.85						1.00	
Satd. Flow (perm)		1831			1577						4388	
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)	0	109	16	60	88	0	0	0	0	138	1226	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	148	0	0	0	0	0	1393	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	10%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		536			462						2601	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.32	
v/c Ratio		0.22			0.32						0.54	
Uniform Delay, d1		18.7			19.3						8.5	
Progression Factor		1.00			0.98						0.83	
Incremental Delay, d2		0.9			1.7						0.7	
Delay (s)		19.6			20.7						7.8	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.7			0.0			7.8	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	28	213	0	0	0	0	21	463	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.93	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1234						2350	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1234						2350	1400
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)	0	0	0	30	227	0	0	0	0	22	493	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	144	170
Lane Group Flow (vph)	0	0	0	0	257	0	0	0	0	0	770	245
Heavy Vehicles (%)	2%	2%	2%	64%	17%	2%	2%	2%	2%	0%	27%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					20.1						40.9	40.9
Effective Green, g (s)					20.6						41.4	41.4
Actuated g/C Ratio					0.29						0.59	0.59
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					363						1390	828
v/s Ratio Prot												
v/s Ratio Perm					0.21						0.33	0.18
v/c Ratio					0.71						0.55	0.30
Uniform Delay, d1					22.0						8.7	7.1
Progression Factor					0.90						0.65	0.11
Incremental Delay, d2					5.9						1.4	0.8
Delay (s)					25.8						7.0	1.6
Level of Service					C						A	A
Approach Delay (s)		0.0			25.8			0.0			5.3	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1109	72	0	0	0	0	0	0	19	452	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		0.99									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3000									2343	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3000									2343	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1275	83	0	0	0	0	0	0	22	520	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	1353	0	0	0	0	0	0	0	0	537	0
Heavy Vehicles (%)	0%	4%	58%	2%	2%	2%	2%	2%	2%	0%	32%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		37.6									23.4	
Effective Green, g (s)		38.1									23.9	
Actuated g/C Ratio		0.54									0.34	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1633									800	
v/s Ratio Prot		c0.45										
v/s Ratio Perm											0.23	
v/c Ratio		0.83									0.67	
Uniform Delay, d1		13.2									19.7	
Progression Factor		0.80									1.46	
Incremental Delay, d2		4.3									1.9	
Delay (s)		14.8									30.6	
Level of Service		B									C	
Approach Delay (s)		14.8			0.0			0.0			30.6	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1461	511	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1114			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1114			
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)	124	692	0	0	0	0	0	1538	538	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	804	0	0	0	0	0	1538	501	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	16%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		18.8						42.7	42.7			
Effective Green, g (s)		18.8						43.2	43.2			
Actuated g/C Ratio		0.27						0.62	0.62			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1229						1892	687			
v/s Ratio Prot								c0.50				
v/s Ratio Perm		0.18							0.45			
v/c Ratio		0.65						0.81	0.73			
Uniform Delay, d1		22.7						10.3	9.3			
Progression Factor		0.88						1.81	1.98			
Incremental Delay, d2		1.2						3.3	5.6			
Delay (s)		21.1						21.9	24.0			
Level of Service		C						C	C			
Approach Delay (s)		21.1			0.0			22.5			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	667	411	76	1407	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3113			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3113			2943				
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)	0	0	0	0	688	424	78	1451	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1094	0	0	1523	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	12%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					24.0			37.0				
Effective Green, g (s)					24.5			37.5				
Actuated g/C Ratio					0.35			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1090			1577				
v/s Ratio Prot					c0.35							
v/s Ratio Perm								0.52				
v/c Ratio					1.00			0.97				
Uniform Delay, d1					22.8			15.6				
Progression Factor					1.00			0.75				
Incremental Delay, d2					28.1			11.1				
Delay (s)					50.9			22.8				
Level of Service					D			C				
Approach Delay (s)		0.0			50.9			22.8			0.0	
Approach LOS		A			D			C			A	

Intersection Summary			
HCM Average Control Delay	34.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1232	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2948									4240	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4240	
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)	0	290	45	0	0	0	0	0	0	394	1325	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	51	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1668	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	10%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.7									48.3	
Effective Green, g (s)		13.2									48.8	
Actuated g/C Ratio		0.19									0.70	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		556									2956	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.39	
v/c Ratio		0.56									0.56	
Uniform Delay, d1		25.8									5.3	
Progression Factor		1.00									0.71	
Incremental Delay, d2		1.3									0.7	
Delay (s)		27.1									4.4	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			4.4	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	438	296	0	0	0	0	0	1272	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.98						1.00	
Satd. Flow (prot)				1114	3094						4415	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1114	3094						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	476	322	0	0	0	0	0	1383	68
RTOR Reduction (vph)	0	0	0	23	23	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	239	513	0	0	0	0	0	1445	0
Heavy Vehicles (%)	2%	2%	2%	18%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				19.7	19.7						41.3	
Effective Green, g (s)				20.2	20.2						41.8	
Actuated g/C Ratio				0.29	0.29						0.60	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				321	893						2636	
v/s Ratio Prot				c0.21	0.17						c0.33	
v/s Ratio Perm												
v/c Ratio				0.74	0.57						0.55	
Uniform Delay, d1				22.5	21.2						8.4	
Progression Factor				1.01	1.10						1.00	
Incremental Delay, d2				2.9	0.3						0.8	
Delay (s)				25.7	23.7						9.3	
Level of Service				C	C						A	
Approach Delay (s)		0.0			24.4			0.0			9.3	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1238	36	28	1027	2	349	8	18	17	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.98	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3311		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3125		1727	3311		1681	1672			1762	
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)	13	1456	42	33	1208	2	411	9	21	20	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1510	0	33	1210	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	9%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.3		5.4	80.7		17.3	17.3			5.0	
Effective Green, g (s)		72.3		5.4	81.7		18.3	18.3			6.0	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1915		79	2292		261	259			90	
v/s Ratio Prot				0.02	c0.37		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.53		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.8		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.56		1.00	1.00			1.00	
Incremental Delay, d2		3.4		2.8	0.7		22.4	19.9			1.7	
Delay (s)		20.5		59.5	5.6		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.5			7.0			69.6			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1575	102	53	1079	0	215	8	109	51	19	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3312		1727	3312		1665	1552			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3312		1727	3312		1665	1552			1751	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	1641	106	55	1124	0	224	8	114	53	20	25
RTOR Reduction (vph)	0	3	0	0	0	0	0	66	0	0	13	0
Lane Group Flow (vph)	26	1744	0	55	1124	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	9%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.3		7.6	66.3		14.5	14.5			11.6	
Effective Green, g (s)	6.6	66.3		7.6	67.3		15.5	15.5			12.6	
Actuated g/C Ratio	0.06	0.56		0.06	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1861		111	1889		219	204			187	
v/s Ratio Prot	0.02	c0.53		0.03	c0.34		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.27	0.94		0.50	0.60		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.9		53.3	16.5		49.9	47.6			49.5	
Progression Factor	0.78	0.60		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	8.6		2.5	1.4		21.0	2.2			2.1	
Delay (s)	42.3	22.9		55.9	17.9		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		23.2			19.6			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	913	3	516	853	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.93	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3260		3038	1517		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3260		3038	1517		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1127	4	637	1053	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1131	0	1153	537	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	13%	7%	7%	14%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	36.2		38.0	86.2		38.0
Effective Green, g (s)	38.2		40.0	86.2		40.0
Actuated g/C Ratio	0.44		0.46	1.00		0.46
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1445		1410	1517		1232
v/s Ratio Prot	c0.35		c0.38	0.35		0.14
v/s Ratio Perm						
v/c Ratio	0.78		0.82	0.35		0.31
Uniform Delay, d1	20.5		20.0	0.0		14.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	2.7		3.7	0.6		0.1
Delay (s)	23.2		23.7	0.6		14.5
Level of Service	C		C	A		B
Approach Delay (s)	23.2		16.4		14.5	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	86.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	20	0	0	8	19	635	1	3	340	55
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	21	0	0	8	20	668	1	3	358	58
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1117	1110	394	1096	1138	671	422			670		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1117	1110	394	1096	1138	671	422			670		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	178	205	655	182	197	459	1136			919		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	676	3	416
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	655	459	1136	1136	919	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.24
Queue Length 95th (ft)	2	1	1	1	0	0
Control Delay (s)	10.7	13.0	8.2	0.3	8.9	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.0	0.5		0.1	
Approach LOS	B	B				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	24	1	10	0	2	4	14	590	2	2	292	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	26	1	11	0	2	4	15	634	2	2	314	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1004	1001	330	995	1015	635	345			637		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1004	1001	330	995	1015	635	345			637		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	98	100	99	99	99			100		
cM capacity (veh/h)	216	240	714	218	236	480	1219			947		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	637	2	345
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	270	357	1219	1700	947	1700
Volume to Capacity	0.14	0.02	0.01	0.37	0.00	0.20
Queue Length 95th (ft)	12	1	1	0	0	0
Control Delay (s)	20.5	15.3	8.0	0.0	8.8	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	20.5	15.3	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	2	393	2	2	222	164
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	2	452	2	2	255	189
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	818	813	349	721	906	453	444			454		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	818	813	349	721	906	453	444			454		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	92	100	100	100	98	99	100			100		
cM capacity (veh/h)	289	314	698	329	266	589	1127			1117		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	454	2	444
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	189
cSH	314	351	1127	1700	1117	1700
Volume to Capacity	0.08	0.03	0.00	0.27	0.00	0.26
Queue Length 95th (ft)	7	2	0	0	0	0
Control Delay (s)	17.5	15.6	8.2	0.0	8.2	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	17.5	15.6	0.0		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	370	30	0	0	0	1	82	1	2	227	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	389	32	0	0	0	1	86	1	2	239	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			421			539	405	405	449	421	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			421			539	405	405	449	421	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	84	100	100	54	99
cM capacity (veh/h)	1604			1149			288	536	648	455	524	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	421	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	532	539
Volume to Capacity	0.00	0.00	0.17	0.47
Queue Length 95th (ft)	0	0	15	63
Control Delay (s)	0.0	0.0	13.1	17.6
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.1	17.6
Approach LOS			B	C

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	573	8	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	599	1	3	616	9	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1222	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1222	599
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		95	99
cM capacity (veh/h)			948		159	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	619	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	181
Volume to Capacity	0.35	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	26.1
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	26.1
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	550	0	2	598	10	0	1	0	8	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	598	0	2	650	11	0	1	0	9	2	8
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			601			1288	1284	603	1279	1279	657
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			601			1288	1284	603	1279	1279	657
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	94	99	98
cM capacity (veh/h)	912			959			136	164	500	138	161	457

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	663	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	912	959	164	198
Volume to Capacity	0.01	0.00	0.01	0.09
Queue Length 95th (ft)	1	0	1	8
Control Delay (s)	0.3	0.1	27.1	25.1
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	27.1	25.1
Approach LOS			D	D

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	553	1	1	593	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	601	1	1	645	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	646			602			1252	1252	602	1252	1252	645
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	646			602			1252	1252	602	1252	1252	645
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	99	100	100
cM capacity (veh/h)	925			961			148	172	500	148	172	472

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	603	647	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	925	961	229	226
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	20.9	21.1
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	20.9	21.1
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	468	34	186	468	11	76	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	514	37	204	514	12	84	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			552			1599	1571	535	1570	1584	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			552			1599	1571	535	1570	1584	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			70			0	97	100	71	98	94
cM capacity (veh/h)	1021			691			60	75	548	65	72	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	602	731	88	54
Volume Left	51	204	84	19
Volume Right	37	12	2	34
cSH	1021	691	61	147
Volume to Capacity	0.05	0.30	1.43	0.37
Queue Length 95th (ft)	4	31	191	38
Control Delay (s)	1.3	7.3	379.5	43.0
Lane LOS	A	A	F	E
Approach Delay (s)	1.3	7.3	379.5	43.0
Approach LOS			F	E

Intersection Summary			
Average Delay	28.3		
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
354: W Wishkah Street & S Garfield St

8/17/2009

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	487	0	0	27	664
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	529	0	0	29	722
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			780	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			780	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			357	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	529	29	722
Volume Left	0	29	0
Volume Right	529	0	0
cSH	1700	1578	1700
Volume to Capacity	0.31	0.02	0.42
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	500	5	0	354	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	549	5	0	389	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1102	1102	1104	0
vC1, stage 1 conf vol			1102	1102	0	
vC2, stage 2 conf vol			0	0	1104	
vCu, unblocked vol	0		1102	1102	1104	0
tC, single (s)	4.2		7.1	6.8	6.5	6.2
tC, 2 stage (s)			6.1	5.8	5.5	
tF (s)	2.3		3.5	4.3	4.0	3.3
p0 queue free %	65		100	0	100	100
cM capacity (veh/h)	1585		152	143	168	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	366	189	389
Volume Left	366	183	0
Volume Right	0	5	0
cSH	1585	1585	143
Volume to Capacity	0.35	0.35	2.73
Queue Length 95th (ft)	39	39	874
Control Delay (s)	8.5	8.3	846.0
Lane LOS	A	A	F
Approach Delay (s)	8.4		846.0
Approach LOS			F

Intersection Summary			
Average Delay	353.6		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	21	3	0	0	169	7	12	830	20	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	3	0	0	192	8	14	943	23	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	603	993	0	984	982	483	0			966		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	603	993	0	984	982	483	0			966		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	99	100	100	22	99	99			100		
cM capacity (veh/h)	136	245	1091	201	247	532	1600			709		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	485	494
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	144	253	1600	1700
Volume to Capacity	0.19	0.79	0.01	0.29
Queue Length 95th (ft)	17	149	1	0
Control Delay (s)	35.6	57.6	0.3	0.0
Lane LOS	E	F	A	
Approach Delay (s)	35.6	57.6	0.1	
Approach LOS	E	F		

Intersection Summary				
Average Delay		10.5		
Intersection Capacity Utilization		46.6%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	6	0	0	16	2	5	844	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	6	0	0	17	2	5	879	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	460	895	2	897	892	442	0			884		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460	895	2	897	892	442	0			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	94	100	100			100		
cM capacity (veh/h)	464	281	1086	233	282	569	1593			761		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	445	445
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	357	299	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.26
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	15.5	17.8	0.1	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.5	17.8	0.1	
Approach LOS	C	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	31	797	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	105	9	36	927	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	600	1013	4	1011	1009	471	3			938		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600	1013	4	1011	1009	471	3			938		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	94	97	100	100	49	98	98			100		
cM capacity (veh/h)	200	204	1019	162	205	492	1592			724		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	499	470
Volume Left	12	0	36	0
Volume Right	0	9	0	7
cSH	202	215	1592	1700
Volume to Capacity	0.09	0.53	0.02	0.28
Queue Length 95th (ft)	8	69	2	0
Control Delay (s)	24.7	39.2	0.7	0.0
Lane LOS	C	E	A	
Approach Delay (s)	24.7	39.2	0.4	
Approach LOS	C	E		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
359: N Washington Street & W Wishkah Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	34	0	0	0	0	3	509	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	4	100	40	0	0	0	0	4	606	10
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	641	628	311	328	633	7	618			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	363	348	0	13	353	7	338			7		
tC, single (s)	7.8	6.8	7.2	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.4	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	92	100	100			100		
cM capacity (veh/h)	446	483	931	852	501	1055	1087			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	140	307	312
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	535	709	1541	1700
Volume to Capacity	0.03	0.20	0.00	0.18
Queue Length 95th (ft)	3	18	0	0
Control Delay (s)	12.0	11.3	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	11.3	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.4		
Intersection Capacity Utilization		36.2%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
360: N Lincoln Street & W Wishkah Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	570	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	613	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	650	642	315	340	648	4	626			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	642	315	340	648	4	626			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	347	392	687	575	389	1080	952			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	317	319
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	418	481	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.9	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.9	13.0	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		35.1%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	525	65	0	30	1	121	41	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	559	69	0	32	1	129	44	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	628			0			643	621	316	326	655	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628			0			643	621	316	326	655	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	77	89	100
cM capacity (veh/h)	950			1565			329	403	686	565	383	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	293	348	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	408	504
Volume to Capacity	0.01	0.20	0.08	0.34
Queue Length 95th (ft)	1	0	7	38
Control Delay (s)	0.4	0.0	14.6	15.8
Lane LOS	A		B	C
Approach Delay (s)	0.2		14.6	15.8
Approach LOS			B	C

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	176	70	338	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	191	76	367	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	240			29			165	174	145	349	261	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240			29			165	174	145	349	261	21
tC, single (s)	4.1			4.1			7.1	6.8	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.3	3.3	3.6	4.1	3.4
p0 queue free %	100			100			91	45	100	98	100	100
cM capacity (veh/h)	1326			1584			804	664	908	334	634	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	240	443	5
Volume Left	0	0	76	5
Volume Right	17	191	0	0
cSH	1326	1584	684	334
Volume to Capacity	0.00	0.00	0.65	0.02
Queue Length 95th (ft)	0	0	119	1
Control Delay (s)	0.0	0.0	19.4	16.0
Lane LOS			C	C
Approach Delay (s)	0.0	0.0	19.4	16.0
Approach LOS			C	C

Intersection Summary			
Average Delay	12.1		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	80	220	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	87	239	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	329	240	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	329	240	240			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	665	799	1338			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	88	240
Volume Left	1	1	0
Volume Right	1	0	1
cSH	726	1338	1700
Volume to Capacity	0.00	0.00	0.14
Queue Length 95th (ft)	0	0	0
Control Delay (s)	10.0	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	10.0	0.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
371: Port Industrial Road & W 1st Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	507	6	16	3	5	5	0	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	39	452	5	5	583	7	18	3	6	6	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	583			456			1172	1124	454	1133	1130	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			456			1172	1124	454	1133	1130	586
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			87	98	99	96	100	90
cM capacity (veh/h)	949			1115			141	189	588	163	187	494

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	590	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	949	1700	1115	1700	174	406
Volume to Capacity	0.04	0.27	0.00	0.35	0.16	0.13
Queue Length 95th (ft)	3	0	0	0	14	11
Control Delay (s)	9.0	0.0	8.2	0.0	29.5	15.2
Lane LOS	A		A		D	C
Approach Delay (s)	0.7		0.1		29.5	15.2
Approach LOS					D	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	446	110	8	14	38	52	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	361	11	16	485	120	9	15	41	57	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	604			372			1013	1040	366	1029	986	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	604			372			1013	1040	366	1029	986	545
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			95	93	94	69	97	95
cM capacity (veh/h)	936			1144			186	212	653	184	240	541

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	621	65	92
Volume Left	18	16	9	57
Volume Right	11	120	41	29
cSH	936	1144	359	237
Volume to Capacity	0.02	0.01	0.18	0.39
Queue Length 95th (ft)	2	1	16	44
Control Delay (s)	0.6	0.4	17.2	29.5
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	17.2	29.5
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	288	2	4	0	339	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	324	2	4	0	381	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381			326			356	737	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			326			356	737	325	406	357	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	89	95	100	100	100
cM capacity (veh/h)	1151			596			591	340	716	481	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	381	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	381	33
cSH	1151	1700	596	1700	453
Volume to Capacity	0.01	0.19	0.01	0.22	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.2	0.0	11.1	0.0	14.4
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.1		14.4
Approach LOS					B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/17/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	39	0	2	0	0	0	31	50	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	0	2	0	0	0	36	59	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		112	94	0	170	93	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		112	94	0	170	93	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	95	100	95	100
cM capacity (veh/h)	1554			1620		809	767	1076	711	777	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	48	0	95	40
Volume Left	46	0	0	2
Volume Right	2	0	59	0
cSH	1554	1700	932	773
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	382	4	15	500	31	10	7	24	32	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1666			1767			1759	1538		1747	
Flt Permitted		0.98			0.99			0.81	1.00		0.80	
Satd. Flow (perm)		1643			1747			1461	1538		1446	
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)	12	411	4	16	538	33	11	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	22	0	12	0
Lane Group Flow (vph)	0	427	0	0	586	0	0	19	4	0	44	0
Heavy Vehicles (%)	7%	14%	7%	2%	7%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		26.2			26.2			5.7	5.7		5.7	
Effective Green, g (s)		26.7			26.7			6.2	6.2		6.2	
Actuated g/C Ratio		0.65			0.65			0.15	0.15		0.15	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1073			1140			221	233		219	
v/s Ratio Prot												
v/s Ratio Perm		0.26			c0.34			0.01	0.00		c0.03	
v/c Ratio		0.40			0.51			0.09	0.02		0.20	
Uniform Delay, d1		3.3			3.7			14.9	14.8		15.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.4			0.2	0.0		0.5	
Delay (s)		3.6			4.1			15.1	14.8		15.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.6			4.1			14.9			15.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	40.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	52	262	19	53
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	203	17	59	298	22	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			220		619	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					416	
vCu, unblocked vol			220		619	203
tC, single (s)			5.0		6.5	7.1
tC, 2 stage (s)					5.5	
tF (s)			3.0		3.6	4.1
p0 queue free %			94		96	91
cM capacity (veh/h)			955		560	656

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	59	298	82
Volume Left	0	0	59	0	22
Volume Right	0	17	0	0	60
cSH	1700	1700	955	1700	627
Volume to Capacity	0.12	0.01	0.06	0.18	0.13
Queue Length 95th (ft)	0	0	5	0	11
Control Delay (s)	0.0	0.0	9.0	0.0	11.6
Lane LOS			A		B
Approach Delay (s)	0.0		1.5		11.6
Approach LOS					B

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	1257	11	0	0	0	0	55	24	16	81	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3285						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3285						3240			3066	
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)	128	1352	12	0	0	0	0	59	26	17	87	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1492	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2576						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.45									c0.03	
v/c Ratio		0.58						0.19			0.33	
Uniform Delay, d1		3.0						28.8			29.3	
Progression Factor		1.00						1.00			0.58	
Incremental Delay, d2		1.0						0.3			0.6	
Delay (s)		3.9						29.1			17.5	
Level of Service		A						C			B	
Approach Delay (s)		3.9			0.0			29.1			17.5	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1230	64	0	0	0	0	80	121	77	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3275						1711			1621	
Flt Permitted		1.00						1.00			0.69	
Satd. Flow (perm)		3275						1711			1149	
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)	18	1447	75	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1536	0	0	0	0	0	214	0	0	187	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		33.8						15.1			15.1	
Effective Green, g (s)		33.8						15.1			15.1	
Actuated g/C Ratio		0.59						0.27			0.27	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1945						454			305	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.47									c0.16	
v/c Ratio		0.79						0.47			0.61	
Uniform Delay, d1		8.8						17.5			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.1						0.8			3.6	
Delay (s)		11.0						18.3			22.0	
Level of Service		B						B			C	
Approach Delay (s)		11.0			0.0			18.3			22.0	
Approach LOS		B			A			B			C	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1217	18	0	0	0	0	25	24	25	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3289						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3289						1597			1355	
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)	23	1255	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1296	0	0	0	0	0	29	0	0	55	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		32.0						4.5			4.5	
Effective Green, g (s)		32.5						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2349						175			149	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.39									c0.04	
v/c Ratio		0.55						0.16			0.37	
Uniform Delay, d1		3.1						18.4			18.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.3						0.4			1.5	
Delay (s)		3.3						18.8			20.3	
Level of Service		A						B			C	
Approach Delay (s)		3.3			0.0			18.8			20.3	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	45.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
418: Simpson Avenue/N Park Street #1012 & Ontario Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	1241	19	0	0	0	0	31	36	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	48	1279	20	0	0	0	0	32	37	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1299			1409	1386	649	790	1396	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1299			1409	1386	649	790	1396	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	77	91	78	66	100
cM capacity (veh/h)	1607			529			71	136	410	207	138	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	688	659	69	92
Volume Left	48	0	0	45
Volume Right	0	20	37	0
cSH	1607	1700	213	165
Volume to Capacity	0.03	0.39	0.32	0.55
Queue Length 95th (ft)	2	0	34	71
Control Delay (s)	0.8	0.0	29.9	50.9
Lane LOS	A		D	F
Approach Delay (s)	0.4		29.9	50.9
Approach LOS			D	F

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	909	12	0	0	0	0	415	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3230						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3230						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	988	13	0	0	0	0	451	9	0	0	0
RTOR Reduction (vph)	52	1	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	56	1000	0	0	0	0	0	458	0	0	0	0
Heavy Vehicles (%)	3%	6%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	20.6	20.6						11.4				
Effective Green, g (s)	21.6	21.6						12.4				
Actuated g/C Ratio	0.51	0.51						0.30				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	901	1661						1032				
v/s Ratio Prot		c0.31						c0.13				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.60						0.44				
Uniform Delay, d1	5.1	7.2						12.0				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.6						0.3				
Delay (s)	5.1	7.8						12.3				
Level of Service	A	A						B				
Approach Delay (s)		7.5			0.0			12.3			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1126	70	0	0	0	0	27	171	41	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2840	1300					1575	1504		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.75	
Satd. Flow (perm)		2840	1300					1575	1504		1395	
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)	18	1211	75	0	0	0	0	29	184	44	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	40	40	0	0	0
Lane Group Flow (vph)	0	1229	66	0	0	0	0	68	65	0	78	0
Heavy Vehicles (%)	6%	8%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.1	53.1					7.9	7.9		7.9	
Effective Green, g (s)		53.6	53.6					8.4	8.4		8.4	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2175	995					189	180		167	
v/s Ratio Prot		c0.43						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.57	0.07					0.36	0.36		0.47	
Uniform Delay, d1		3.4	2.0					28.3	28.3		28.7	
Progression Factor		0.31	0.34					1.00	1.00		1.00	
Incremental Delay, d2		1.0	0.1					1.2	1.2		2.1	
Delay (s)		2.0	0.8					29.5	29.5		30.8	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.9			0.0			29.5			30.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1097	24	0	0	0	0	12	86	7	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2832						1314			1462	
Flt Permitted		1.00						1.00			0.87	
Satd. Flow (perm)		2832						1314			1297	
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)	24	1155	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	48	0	0	0	0
Lane Group Flow (vph)	0	1203	0	0	0	0	0	56	0	0	18	0
Heavy Vehicles (%)	6%	8%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.5						7.5			7.5	
Effective Green, g (s)		54.5						7.5			7.5	
Actuated g/C Ratio		0.78						0.11			0.11	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2205						141			139	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.42									0.01	
v/c Ratio		0.55						0.40			0.13	
Uniform Delay, d1		3.0						29.1			28.3	
Progression Factor		0.36						1.00			1.00	
Incremental Delay, d2		0.6						1.8			0.4	
Delay (s)		1.7						31.0			28.7	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			31.0			28.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	956	16	0	0	0	0	0	29	289	216	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2809							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2809							1289	1681	1405	
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)	0	1006	17	0	0	0	0	0	31	304	227	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	175	10	0
Lane Group Flow (vph)	0	1021	0	0	0	0	0	0	4	86	260	0
Heavy Vehicles (%)	2%	9%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		29.1							9.5	17.9	17.9	
Effective Green, g (s)		29.6							10.0	18.4	18.4	
Actuated g/C Ratio		0.42							0.14	0.26	0.26	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1188							184	442	369	
v/s Ratio Prot		c0.36							c0.00	0.05	c0.19	
v/s Ratio Perm												
v/c Ratio		0.86							0.02	0.20	0.71	
Uniform Delay, d1		18.3							25.8	20.0	23.3	
Progression Factor		1.10							1.00	1.00	1.00	
Incremental Delay, d2		7.5							0.2	1.0	10.8	
Delay (s)		27.6							26.0	21.0	34.2	
Level of Service		C							C	C	C	
Approach Delay (s)		27.6			0.0			26.0			27.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	433	12	0	0	0	0	45	25	460	47	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2733						1418		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2733						1418		1681	1360	
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)	7	461	13	0	0	0	0	48	27	489	50	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	479	0	0	0	0	0	51	0	269	270	0
Heavy Vehicles (%)	6%	12%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		19.9						6.9		29.7	29.7	
Effective Green, g (s)		20.4						7.4		30.2	30.2	
Actuated g/C Ratio		0.29						0.11		0.43	0.43	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		796						150		725	587	
v/s Ratio Prot								c0.04		0.16	c0.20	
v/s Ratio Perm		0.18										
v/c Ratio		0.60						0.34		0.37	0.46	
Uniform Delay, d1		21.3						29.0		13.5	14.1	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.3						1.3		1.5	2.6	
Delay (s)		22.6						30.4		14.9	16.7	
Level of Service		C						C		B	B	
Approach Delay (s)		22.6			0.0			30.4			15.8	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	359	0	567	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1678		2031		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1678		2031		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	399	0	630	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	399	0	630	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	11%	2%	6%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		30.5		30.5		
Effective Green, g (s)		30.5		30.5		
Actuated g/C Ratio		0.75		0.75		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1264		1530		
v/s Ratio Prot		0.24		c0.31		
v/s Ratio Perm						
v/c Ratio		0.32		0.41		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.2		
Delay (s)		1.8		2.0		
Level of Service		A		A		
Approach Delay (s)	1.8			2.0	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	40.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	944	22	18	163	0	0	90	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3395			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3395			3044			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	983	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	68	0
Lane Group Flow (vph)	0	0	0	0	1019	0	0	189	0	0	279	0
Heavy Vehicles (%)	2%	2%	2%	3%	6%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					48.8			12.2			12.2	
Effective Green, g (s)					49.3			12.7			12.7	
Actuated g/C Ratio					0.70			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2391			552			543	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.30			0.06				
v/c Ratio					0.43			0.34			0.51	
Uniform Delay, d1					4.4			25.0			25.9	
Progression Factor					1.39			1.03			1.00	
Incremental Delay, d2					0.5			0.3			0.8	
Delay (s)					6.6			26.2			26.7	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.6			26.2			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1246	19	13	381	0	0	51	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
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3290			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3290			1679			1710	1615
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)	0	0	0	15	1326	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	44
Lane Group Flow (vph)	0	0	0	0	1359	0	0	419	0	0	54	246
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2021			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.41			c0.25				0.15
v/c Ratio					0.67			0.92			0.12	0.56
Uniform Delay, d1					8.9			24.8			19.2	21.9
Progression Factor					0.65			1.00			1.00	1.00
Incremental Delay, d2					1.7			26.1			0.5	5.1
Delay (s)					7.5			50.8			19.7	27.0
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.5			50.8			25.9	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1170	92	32	68	0	0	211	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3500	1554		1815			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3500	1554		1550			1794	
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)	0	0	0	46	1232	97	34	72	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1278	55	0	106	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	3%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					30.6	30.6		15.0			15.0	
Effective Green, g (s)					30.6	30.6		15.0			15.0	
Actuated g/C Ratio					0.57	0.57		0.28			0.28	
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)					1998	887		434			502	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.37	0.04		0.07				
v/c Ratio					0.64	0.06		0.24			0.60	
Uniform Delay, d1					7.8	5.1		14.9			16.7	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.7	0.0		0.3			1.9	
Delay (s)					8.5	5.1		15.2			18.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.2			15.2			18.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1330	5	18	7	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.96			1.00	
Satd. Flow (prot)					3262			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3262			1676			1777	
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)	0	0	0	35	1415	5	19	7	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1455	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	5%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.9			1.3			1.3	
Effective Green, g (s)					30.4			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2467			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.45			c0.02				
v/c Ratio					0.59			0.35			0.29	
Uniform Delay, d1					2.2			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.4			2.8			2.0	
Delay (s)					2.5			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.5			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	42	1221	12	52	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	46	1342	13	57	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1355			0			785	1447	0	1448	1441	677
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1355			0			785	1447	0	1448	1441	677
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			76	89	100	100	85	97
cM capacity (veh/h)	504			1622			237	127	1084	84	130	400

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	717	684	71	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	202	175
Volume to Capacity	0.03	0.40	0.35	0.18
Queue Length 95th (ft)	2	0	38	16
Control Delay (s)	0.8	0.0	32.3	30.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		32.3	30.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1209	2	471	23	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3297		1618	1630				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3297		1618	1630				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1358	2	529	26	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	156	156	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1360	0	119	124	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.3		10.1	10.1				0.7
Effective Green, g (s)					29.3		11.1	11.1				1.7
Actuated g/C Ratio					0.54		0.21	0.21				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1786		332	334				51
v/s Ratio Prot					c0.41							
v/s Ratio Perm							0.07	0.08				c0.00
v/c Ratio					0.76		0.36	0.37				0.00
Uniform Delay, d1					9.7		18.4	18.5				25.4
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					2.0		0.7	0.7				0.0
Delay (s)					11.6		19.1	19.2				25.4
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.6			19.2			25.4	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations			↑↑	↱		↱
Volume (veh/h)	0	0	1272	184	0	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1339	194	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1339				1339	669
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1339				1339	669
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	77
cM capacity (veh/h)	511				142	395

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	669	669	194	89
Volume Left	0	0	0	0
Volume Right	0	0	194	89
cSH	1700	1700	1700	395
Volume to Capacity	0.39	0.39	0.11	0.23
Queue Length 95th (ft)	0	0	0	21
Control Delay (s)	0.0	0.0	0.0	16.8
Lane LOS				C
Approach Delay (s)	0.0			16.8
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	474	1116	0	0	8	98	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	489	1151	0	0	8	101	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			489	489	489	1639	1639	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			489	489	489	1639	1639	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	0	100	
cM capacity (veh/h)			480	579	490	100	395	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	872	767	8	101
Volume Left	0	0	8	0
Volume Right	384	767	0	0
cSH	1700	1700	490	100
Volume to Capacity	0.51	0.45	0.02	1.01
Queue Length 95th (ft)	0	0	1	155
Control Delay (s)	0.0	0.0	12.5	170.1
Lane LOS			B	F
Approach Delay (s)	0.0		158.2	
Approach LOS			F	

Intersection Summary			
Average Delay	9.9		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	52	0	0	1236	0	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3438		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3438		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	0	0	1343	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	0	0	1343	0	508
Heavy Vehicles (%)	2%	2%	3%	5%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.4			48.1		70.5
Effective Green, g (s)	13.9			48.6		70.5
Actuated g/C Ratio	0.20			0.69		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	349			2370		2787
v/s Ratio Prot	0.03			c0.39		
v/s Ratio Perm						c0.18
v/c Ratio	0.16			0.57		0.18
Uniform Delay, d1	23.5			5.6		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	23.6			6.5		0.1
Level of Service	C			A		A
Approach Delay (s)	23.6			6.5	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	4.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	659	577	467	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1631	1845	3467	
Flt Permitted			0.38	1.00	1.00	
Satd. Flow (perm)			658	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	686	601	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	686	601	518	0
Heavy Vehicles (%)	2%	2%	7%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			51.2	55.7	25.0	
Effective Green, g (s)			52.2	56.2	25.5	
Actuated g/C Ratio			0.74	0.80	0.36	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			856	1471	1254	
v/s Ratio Prot			c0.30	0.33	0.15	
v/s Ratio Perm			c0.29			
v/c Ratio			0.80	0.41	0.41	
Uniform Delay, d1			5.5	2.2	16.9	
Progression Factor			0.63	0.08	1.00	
Incremental Delay, d2			4.5	0.7	0.1	
Delay (s)			7.9	0.8	17.0	
Level of Service			A	A	B	
Approach Delay (s)	0.0			4.6	17.0	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	18.3
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	947	218	0	0	0	21	0	482	307	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.94				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2315				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2315				
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)	1018	234	0	0	0	23	0	518	330	0	0	0
RTOR Reduction (vph)	362	91	0	0	0	23	0	100	0	0	0	0
Lane Group Flow (vph)	259	540	0	0	0	0	0	748	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	10%	48%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	24.2	24.2				2.3		31.5				
Effective Green, g (s)	24.7	24.7				1.3		32.0				
Actuated g/C Ratio	0.35	0.35				0.02		0.46				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	571	587				24		1058				
v/s Ratio Prot								c0.32				
v/s Ratio Perm	0.16	0.33				c0.00						
v/c Ratio	0.45	0.92				0.02		0.71				
Uniform Delay, d1	17.4	21.7				33.7		15.2				
Progression Factor	1.32	0.31				1.00		1.00				
Incremental Delay, d2	1.5	14.7				0.1		2.2				
Delay (s)	24.6	21.3				33.8		17.4				
Level of Service	C	C				C		B				
Approach Delay (s)		22.9			33.8			17.4			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	21	0	0	322	18	45	1413	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1320			4887				
Flt Permitted		0.84			1.00			1.00				
Satd. Flow (perm)		1257			1320			4887				
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)	17	22	0	0	339	19	47	1487	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	355	0	0	1540	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	45%	5%	4%	6%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		23.8			23.8			37.2				
Effective Green, g (s)		24.3			24.3			37.7				
Actuated g/C Ratio		0.35			0.35			0.54				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		436			458			2632				
v/s Ratio Prot					c0.27							
v/s Ratio Perm		0.03						0.32				
v/c Ratio		0.09			0.77			0.58				
Uniform Delay, d1		15.4			20.4			10.9				
Progression Factor		0.69			1.00			0.80				
Incremental Delay, d2		0.1			8.0			0.6				
Delay (s)		10.7			28.4			9.4				
Level of Service		B			C			A				
Approach Delay (s)		10.7			28.4			9.4			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	64	1465	96	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1712	1504		4522				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4522				
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)	95	152	0	0	86	120	67	1542	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	24	0	9	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	72	0	1701	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	6%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.3			17.3	17.3		44.2				
Effective Green, g (s)		17.8			17.8	17.8		44.2				
Actuated g/C Ratio		0.25			0.25	0.25		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		316			435	382		2855				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.38				
v/c Ratio		0.78			0.22	0.19		0.60				
Uniform Delay, d1		24.3			20.6	20.4		7.6				
Progression Factor		0.96			1.00	1.00		1.83				
Incremental Delay, d2		11.3			0.3	0.2		0.8				
Delay (s)		34.6			20.9	20.7		14.8				
Level of Service		C			C	C		B				
Approach Delay (s)		34.6			20.8			14.8			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	17.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	76	31	0	0	71	32	28	1461	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1785			4381				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4381				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	87	36	0	0	82	37	32	1679	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	19	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	100	0	0	1760	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.5			11.5			50.0				
Effective Green, g (s)		12.0			12.0			50.0				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		227			306			3129				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.09						0.40				
v/c Ratio		0.54			0.33			0.56				
Uniform Delay, d1		26.5			25.5			4.8				
Progression Factor		1.61			1.00			0.26				
Incremental Delay, d2		2.6			0.6			0.6				
Delay (s)		45.1			26.1			1.8				
Level of Service		D			C			A				
Approach Delay (s)		45.1			26.1			1.8			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	233	25	0	0	32	18	54	1635	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4390				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4390				
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)	248	27	0	0	34	19	57	1739	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	275	0	0	42	0	0	1816	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.4			20.4			39.6				
Effective Green, g (s)		20.9			20.9			41.1				
Actuated g/C Ratio		0.30			0.30			0.59				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		315			423			2578				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.41				
v/c Ratio		0.87			0.10			0.70				
Uniform Delay, d1		23.3			17.7			10.2				
Progression Factor		0.67			1.00			0.57				
Incremental Delay, d2		22.1			0.1			1.4				
Delay (s)		37.7			17.8			7.2				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.8			7.2			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1607	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1374			4395				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1374			4395				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	60	17	0	0	8	11	25	1826	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	9	0	0	1868	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		151			183			3309				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.43				
v/c Ratio		0.51			0.05			0.56				
Uniform Delay, d1		28.2			26.5			3.7				
Progression Factor		0.82			1.00			0.26				
Incremental Delay, d2		2.6			0.1			0.5				
Delay (s)		25.9			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		25.9			26.6			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	56	37	34	35	0	0	0	0	17	1314	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4426	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1185						4426	
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)	0	62	41	38	39	0	0	0	0	19	1460	40
RTOR Reduction (vph)	0	35	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	68	0	0	77	0	0	0	0	0	1517	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.5			8.5						53.0	
Effective Green, g (s)		9.0			9.0						53.0	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		181			152						3351	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.06						0.34	
v/c Ratio		0.38			0.51						0.45	
Uniform Delay, d1		27.9			28.4						3.1	
Progression Factor		1.00			0.94						0.69	
Incremental Delay, d2		1.3			2.6						0.4	
Delay (s)		29.2			29.4						2.6	
Level of Service		C			C						A	
Approach Delay (s)		29.2			29.4			0.0			2.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	145	35	24	68	0	0	0	0	8	1173	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1451			1471						4404	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1451			1325						4404	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	158	38	26	74	0	0	0	0	9	1275	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	100	0	0	0	0	0	1361	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		13.9			13.9						46.1	
Effective Green, g (s)		14.4			14.4						47.6	
Actuated g/C Ratio		0.21			0.21						0.68	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		298			273						2995	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.08						0.31	
v/c Ratio		0.61			0.37						0.45	
Uniform Delay, d1		25.2			23.9						5.2	
Progression Factor		1.00			0.95						0.26	
Incremental Delay, d2		3.5			0.8						0.5	
Delay (s)		28.7			23.5						1.8	
Level of Service		C			C						A	
Approach Delay (s)		28.7			23.5			0.0			1.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1188	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1448			1471						4429	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1448			1339						4429	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	82	22	17	49	0	0	0	0	21	1291	27
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	87	0	0	66	0	0	0	0	0	1337	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.4			8.4						53.1	
Effective Green, g (s)		8.9			8.9						53.1	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		184			170						3360	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.30	
v/c Ratio		0.47			0.39						0.40	
Uniform Delay, d1		28.4			28.1						2.9	
Progression Factor		1.00			0.55						0.24	
Incremental Delay, d2		1.9			1.4						0.3	
Delay (s)		30.3			16.9						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.3			16.9			0.0			1.0	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	104	15	57	84	0	0	0	0	131	1051	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						0.99	
Satd. Flow (prot)		1831			1826						4531	
Flt Permitted		1.00			0.85						0.99	
Satd. Flow (perm)		1831			1577						4531	
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)	0	109	16	60	88	0	0	0	0	138	1106	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	148	0	0	0	0	0	1273	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		536			462						2686	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.28	
v/c Ratio		0.22			0.32						0.47	
Uniform Delay, d1		18.7			19.3						8.1	
Progression Factor		1.00			0.97						0.86	
Incremental Delay, d2		0.9			1.7						0.6	
Delay (s)		19.6			20.5						7.5	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.5			0.0			7.5	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	192	163	0	0	0	0	21	349	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.92	0.85
Flt Protected					0.97						1.00	1.00
Satd. Flow (prot)					977						2476	1400
Flt Permitted					0.97						1.00	1.00
Satd. Flow (perm)					977						2476	1400
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)	0	0	0	204	173	0	0	0	0	22	371	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	218	218
Lane Group Flow (vph)	0	0	0	0	377	0	0	0	0	0	582	189
Heavy Vehicles (%)	2%	2%	2%	91%	5%	2%	2%	2%	2%	0%	15%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					29.0						32.0	32.0
Effective Green, g (s)					29.5						32.5	32.5
Actuated g/C Ratio					0.42						0.46	0.46
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					412						1150	650
v/s Ratio Prot												
v/s Ratio Perm					0.39						0.24	0.14
v/c Ratio					0.92						0.51	0.29
Uniform Delay, d1					19.1						13.1	11.6
Progression Factor					1.01						0.20	0.19
Incremental Delay, d2					20.9						1.4	1.0
Delay (s)					40.3						4.1	3.2
Level of Service					D						A	A
Approach Delay (s)		0.0			40.3			0.0			3.8	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1109	22	0	0	0	0	0	0	19	502	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3112									2274	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3112									2274	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1275	25	0	0	0	0	0	0	22	577	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	1299	0	0	0	0	0	0	0	0	595	0
Heavy Vehicles (%)	0%	4%	10%	2%	2%	2%	2%	2%	2%	0%	36%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		36.1									24.9	
Effective Green, g (s)		36.6									25.4	
Actuated g/C Ratio		0.52									0.36	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1627									825	
v/s Ratio Prot		c0.42										
v/s Ratio Perm											0.26	
v/c Ratio		0.80									0.72	
Uniform Delay, d1		13.7									19.2	
Progression Factor		0.82									1.29	
Incremental Delay, d2		3.6									2.4	
Delay (s)		14.8									27.3	
Level of Service		B									C	
Approach Delay (s)		14.8			0.0			0.0			27.3	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1461	397	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1242			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1242			
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)	124	692	0	0	0	0	0	1538	418	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	804	0	0	0	0	0	1538	381	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	4%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		18.8						42.7	42.7			
Effective Green, g (s)		18.8						43.2	43.2			
Actuated g/C Ratio		0.27						0.62	0.62			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1229						1892	766			
v/s Ratio Prot								c0.50				
v/s Ratio Perm		0.18							0.31			
v/c Ratio		0.65						0.81	0.50			
Uniform Delay, d1		22.7						10.3	7.4			
Progression Factor		0.88						1.87	2.15			
Incremental Delay, d2		1.2						3.4	2.0			
Delay (s)		21.2						22.7	17.9			
Level of Service		C						C	B			
Approach Delay (s)		21.2			0.0			21.7			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	553	411	76	1407	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3254			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3254			2943				
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)	0	0	0	0	570	424	78	1451	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	976	0	0	1524	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					23.4			37.6				
Effective Green, g (s)					23.9			38.1				
Actuated g/C Ratio					0.34			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1111			1602				
v/s Ratio Prot					c0.30							
v/s Ratio Perm								0.52				
v/c Ratio					0.88			0.95				
Uniform Delay, d1					21.7			15.1				
Progression Factor					1.00			0.76				
Incremental Delay, d2					8.1			9.1				
Delay (s)					29.7			20.6				
Level of Service					C			C				
Approach Delay (s)		0.0			29.7			20.6			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1118	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2948									4361	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4361	
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)	0	290	45	0	0	0	0	0	0	394	1202	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	57	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1539	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.7									48.3	
Effective Green, g (s)		13.2									48.8	
Actuated g/C Ratio		0.19									0.70	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		556									3040	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.35	
v/c Ratio		0.56									0.51	
Uniform Delay, d1		25.8									5.0	
Progression Factor		1.00									0.65	
Incremental Delay, d2		1.3									0.5	
Delay (s)		27.1									3.8	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			3.8	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	324	296	0	0	0	0	0	1272	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.99						1.00	
Satd. Flow (prot)				1264	3277						4415	
Flt Permitted				0.95	0.99						1.00	
Satd. Flow (perm)				1264	3277						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	352	322	0	0	0	0	0	1383	68
RTOR Reduction (vph)	0	0	0	25	25	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	193	431	0	0	0	0	0	1445	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				16.8	16.8						44.2	
Effective Green, g (s)				17.3	17.3						44.7	
Actuated g/C Ratio				0.25	0.25						0.64	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				312	810						2819	
v/s Ratio Prot				c0.15	0.13						c0.33	
v/s Ratio Perm												
v/c Ratio				0.62	0.53						0.51	
Uniform Delay, d1				23.4	22.8						6.8	
Progression Factor				1.20	1.25						1.00	
Incremental Delay, d2				1.9	0.4						0.7	
Delay (s)				30.0	29.0						7.5	
Level of Service				C	C						A	
Approach Delay (s)		0.0			29.3			0.0			7.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
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)	11	1238	36	28	1027	2	349	8	18	17	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.98	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3311		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3125		1727	3311		1681	1672			1762	
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)	13	1456	42	33	1208	2	411	9	21	20	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1510	0	33	1210	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	9%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.3		5.4	80.7		17.3	17.3			5.0	
Effective Green, g (s)		72.3		5.4	81.7		18.3	18.3			6.0	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1915		79	2292		261	259			90	
v/s Ratio Prot				0.02	c0.37		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.53		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.8		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.56		1.00	1.00			1.00	
Incremental Delay, d2		3.4		2.8	0.7		22.4	19.9			1.7	
Delay (s)		20.5		59.5	5.6		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.5			7.0			69.6			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1575	102	53	1079	0	215	8	109	51	19	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3312		1727	3312		1665	1552			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3312		1727	3312		1665	1552			1751	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	1641	106	55	1124	0	224	8	114	53	20	25
RTOR Reduction (vph)	0	3	0	0	0	0	0	66	0	0	13	0
Lane Group Flow (vph)	26	1744	0	55	1124	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	9%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.3		7.6	66.3		14.5	14.5			11.6	
Effective Green, g (s)	6.6	66.3		7.6	67.3		15.5	15.5			12.6	
Actuated g/C Ratio	0.06	0.56		0.06	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1861		111	1889		219	204			187	
v/s Ratio Prot	0.02	c0.53		0.03	c0.34		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.27	0.94		0.50	0.60		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.9		53.3	16.5		49.9	47.6			49.5	
Progression Factor	0.78	0.60		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	8.6		2.5	1.4		21.0	2.2			2.1	
Delay (s)	42.3	22.9		55.9	17.9		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		23.2			19.6			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	963	3	516	903	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.93	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3176		3002	1491		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3176		3002	1491		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1189	4	637	1115	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1193	0	1195	557	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	16%	7%	7%	16%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	39.2		40.5	91.7		40.5
Effective Green, g (s)	41.2		42.5	91.7		42.5
Actuated g/C Ratio	0.45		0.46	1.00		0.46
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1427		1391	1491		1231
v/s Ratio Prot	c0.38		c0.40	0.37		0.14
v/s Ratio Perm						
v/c Ratio	0.84		0.86	0.37		0.31
Uniform Delay, d1	22.3		21.9	0.0		15.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	4.3		5.4	0.7		0.1
Delay (s)	26.6		27.4	0.7		15.5
Level of Service	C		C	A		B
Approach Delay (s)	26.6		18.9		15.5	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	91.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	20	0	0	8	19	635	1	3	340	55
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	21	0	0	8	20	668	1	3	358	58
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1117	1110	394	1096	1138	671	422			670		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1117	1110	394	1096	1138	671	422			670		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	178	205	655	182	197	459	1136			919		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	676	3	416
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	655	459	1136	1136	919	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.24
Queue Length 95th (ft)	2	1	1	1	0	0
Control Delay (s)	10.7	13.0	8.2	0.3	8.9	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.0	0.5		0.1	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	38.6%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
332: S M Street & W State Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	24	1	10	0	2	4	14	590	2	2	292	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	26	1	11	0	2	4	15	634	2	2	314	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1004	1001	330	995	1015	635	345			637		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1004	1001	330	995	1015	635	345			637		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	98	100	99	99	99			100		
cM capacity (veh/h)	216	240	714	218	236	480	1219			947		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	637	2	345
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	270	357	1219	1700	947	1700
Volume to Capacity	0.14	0.02	0.01	0.37	0.00	0.20
Queue Length 95th (ft)	12	1	1	0	0	0
Control Delay (s)	20.5	15.3	8.0	0.0	8.8	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	20.5	15.3	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	2	557	2	2	222	328
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	2	640	2	2	255	377
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1101	1095	444	909	1283	641	632			643		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1101	1095	444	909	1283	641	632			643		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	88	100	99	100	96	99	100			100		
cM capacity (veh/h)	183	214	618	244	158	459	960			952		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	643	2	632
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	377
cSH	203	223	960	1700	952	1700
Volume to Capacity	0.12	0.05	0.00	0.38	0.00	0.37
Queue Length 95th (ft)	10	4	0	0	0	0
Control Delay (s)	25.3	22.0	8.8	0.0	8.8	0.0
Lane LOS	D	C	A		A	
Approach Delay (s)	25.3	22.0	0.0		0.0	
Approach LOS	D	C				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
336: Simpson Avenue/N Park Street & W State Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	534	30	0	0	0	1	82	1	2	227	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	562	32	0	0	0	1	86	1	2	239	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			594			712	578	578	622	594	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			594			712	578	578	622	594	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	80	100	99	43	99
cM capacity (veh/h)	1604			992			188	428	518	336	418	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	594	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	423	433
Volume to Capacity	0.00	0.00	0.21	0.59
Queue Length 95th (ft)	0	0	19	93
Control Delay (s)	0.0	0.0	15.8	24.7
Lane LOS			C	C
Approach Delay (s)	0.0	0.0	15.8	24.7
Approach LOS			C	C

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	573	8	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	599	1	3	616	9	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1222	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1222	599
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		95	99
cM capacity (veh/h)			948		159	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	619	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	181
Volume to Capacity	0.35	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	26.1
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	26.1
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	550	0	2	598	10	0	1	0	8	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	598	0	2	650	11	0	1	0	9	2	8
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			601			1288	1284	603	1279	1279	657
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			601			1288	1284	603	1279	1279	657
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	94	99	98
cM capacity (veh/h)	912			959			136	164	500	138	161	457

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	663	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	912	959	164	198
Volume to Capacity	0.01	0.00	0.01	0.09
Queue Length 95th (ft)	1	0	1	8
Control Delay (s)	0.3	0.1	27.1	25.1
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	27.1	25.1
Approach LOS			D	D

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	553	1	1	593	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	601	1	1	645	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	646			602			1252	1252	602	1252	1252	645
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	646			602			1252	1252	602	1252	1252	645
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	99	100	100
cM capacity (veh/h)	925			961			148	172	500	148	172	472

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	603	647	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	925	961	229	226
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	20.9	21.1
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	20.9	21.1
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	468	34	186	468	11	76	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	514	37	204	514	12	84	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			552			1599	1571	535	1570	1584	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			552			1599	1571	535	1570	1584	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			70			0	97	100	71	98	94
cM capacity (veh/h)	1021			691			60	75	548	65	72	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	602	731	88	54
Volume Left	51	204	84	19
Volume Right	37	12	2	34
cSH	1021	691	61	147
Volume to Capacity	0.05	0.30	1.43	0.37
Queue Length 95th (ft)	4	31	191	38
Control Delay (s)	1.3	7.3	379.5	43.0
Lane LOS	A	A	F	E
Approach Delay (s)	1.3	7.3	379.5	43.0
Approach LOS			F	E

Intersection Summary			
Average Delay	28.3		
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	487	0	0	27	664
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	529	0	0	29	722
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			780	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			780	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			357	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	529	29	722
Volume Left	0	29	0
Volume Right	529	0	0
cSH	1700	1578	1700
Volume to Capacity	0.31	0.02	0.42
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	500	5	0	354	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	549	5	0	389	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1102	1102	1104	0
vC1, stage 1 conf vol			1102	1102	0	
vC2, stage 2 conf vol			0	0	1104	
vCu, unblocked vol	0		1102	1102	1104	0
tC, single (s)	4.2		7.1	6.8	6.5	6.2
tC, 2 stage (s)			6.1	5.8	5.5	
tF (s)	2.3		3.5	4.3	4.0	3.3
p0 queue free %	65		100	0	100	100
cM capacity (veh/h)	1585		152	143	168	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	366	189	389
Volume Left	366	183	0
Volume Right	0	5	0
cSH	1585	1585	143
Volume to Capacity	0.35	0.35	2.73
Queue Length 95th (ft)	39	39	874
Control Delay (s)	8.5	8.3	846.0
Lane LOS	A	A	F
Approach Delay (s)	8.4		846.0
Approach LOS			F

Intersection Summary			
Average Delay	353.6		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	21	3	0	0	169	7	12	830	20	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	3	0	0	192	8	14	943	23	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	603	993	0	984	982	483	0			966		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	603	993	0	984	982	483	0			966		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	99	100	100	22	99	99			100		
cM capacity (veh/h)	136	245	1091	201	247	532	1600			709		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	485	494
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	144	253	1600	1700
Volume to Capacity	0.19	0.79	0.01	0.29
Queue Length 95th (ft)	17	149	1	0
Control Delay (s)	35.6	57.6	0.3	0.0
Lane LOS	E	F	A	
Approach Delay (s)	35.6	57.6	0.1	
Approach LOS	E	F		

Intersection Summary			
Average Delay	10.5		
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
357: N Lincoln Street & W Heron Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	6	0	0	16	2	5	844	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	6	0	0	17	2	5	879	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	460	895	2	897	892	442	0			884		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460	895	2	897	892	442	0			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	94	100	100			100		
cM capacity (veh/h)	464	281	1086	233	282	569	1593			761		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	445	445
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	357	299	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.26
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	15.5	17.8	0.1	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.5	17.8	0.1	
Approach LOS	C	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	31	797	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	105	9	36	927	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	600	1013	4	1011	1009	471	3			938		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600	1013	4	1011	1009	471	3			938		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	94	97	100	100	49	98	98			100		
cM capacity (veh/h)	200	204	1019	162	205	492	1592			724		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	499	470
Volume Left	12	0	36	0
Volume Right	0	9	0	7
cSH	202	215	1592	1700
Volume to Capacity	0.09	0.53	0.02	0.28
Queue Length 95th (ft)	8	69	2	0
Control Delay (s)	24.7	39.2	0.7	0.0
Lane LOS	C	E	A	
Approach Delay (s)	24.7	39.2	0.4	
Approach LOS	C	E		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
359: N Washington Street & W Wishkah Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	34	0	0	0	0	3	509	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	4	100	40	0	0	0	0	4	606	10
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.88	0.88	0.88	0.88	0.88		0.88					
vC, conflicting volume	641	628	311	328	633	7	618			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	308	293	0	0	299	7	283			7		
tC, single (s)	7.8	6.8	7.2	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.4	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	92	100	100			100		
cM capacity (veh/h)	481	510	912	853	527	1055	1116			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	140	307	312
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	559	724	1541	1700
Volume to Capacity	0.03	0.19	0.00	0.18
Queue Length 95th (ft)	2	18	0	0
Control Delay (s)	11.7	11.2	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.7	11.2	0.1	
Approach LOS	B	B		

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	570	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	613	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	650	642	315	340	648	4	626			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	642	315	340	648	4	626			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	347	392	687	575	389	1080	952			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	317	319
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	418	481	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.9	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.9	13.0	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		35.1%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	525	65	0	30	1	121	41	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	559	69	0	32	1	129	44	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	628			0			643	621	316	326	655	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628			0			643	621	316	326	655	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	77	89	100
cM capacity (veh/h)	950			1565			329	403	686	565	383	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	293	348	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	408	504
Volume to Capacity	0.01	0.20	0.08	0.34
Queue Length 95th (ft)	1	0	7	38
Control Delay (s)	0.4	0.0	14.6	15.8
Lane LOS	A		B	C
Approach Delay (s)	0.2		14.6	15.8
Approach LOS			B	C

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
362: S Division Street & W Heron Street

8/12/2009

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	176	70	338	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	191	76	367	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	240			29			165	174	145	349	261	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240			29			165	174	145	349	261	21
tC, single (s)	4.1			4.1			7.1	6.8	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.3	3.3	3.6	4.1	3.4
p0 queue free %	100			100			91	45	100	98	100	100
cM capacity (veh/h)	1326			1584			804	664	908	334	634	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	240	443	5
Volume Left	0	0	76	5
Volume Right	17	191	0	0
cSH	1326	1584	684	334
Volume to Capacity	0.00	0.00	0.65	0.02
Queue Length 95th (ft)	0	0	119	1
Control Delay (s)	0.0	0.0	19.4	16.0
Lane LOS			C	C
Approach Delay (s)	0.0	0.0	19.4	16.0
Approach LOS			C	C

Intersection Summary			
Average Delay	12.1		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	80	220	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	87	239	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	329	240	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	329	240	240			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	665	799	1338			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	88	240
Volume Left	1	1	0
Volume Right	1	0	1
cSH	726	1338	1700
Volume to Capacity	0.00	0.00	0.14
Queue Length 95th (ft)	0	0	0
Control Delay (s)	10.0	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	10.0	0.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	507	6	16	3	5	5	0	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	39	452	5	5	583	7	18	3	6	6	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	583			456			1172	1124	454	1133	1130	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			456			1172	1124	454	1133	1130	586
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			87	98	99	96	100	90
cM capacity (veh/h)	949			1115			141	189	588	163	187	494

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	590	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	949	1700	1115	1700	174	406
Volume to Capacity	0.04	0.27	0.00	0.35	0.16	0.13
Queue Length 95th (ft)	3	0	0	0	14	11
Control Delay (s)	9.0	0.0	8.2	0.0	29.5	15.2
Lane LOS	A		A		D	C
Approach Delay (s)	0.7		0.1		29.5	15.2
Approach LOS					D	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	446	110	8	14	38	52	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	361	11	16	485	120	9	15	41	57	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	604			372			1013	1040	366	1029	986	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	604			372			1013	1040	366	1029	986	545
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			95	93	94	69	97	95
cM capacity (veh/h)	936			1144			186	212	653	184	240	541

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	621	65	92
Volume Left	18	16	9	57
Volume Right	11	120	41	29
cSH	936	1144	359	237
Volume to Capacity	0.02	0.01	0.18	0.39
Queue Length 95th (ft)	2	1	16	44
Control Delay (s)	0.6	0.4	17.2	29.5
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	17.2	29.5
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	288	2	4	0	339	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	324	2	4	0	381	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381			326			356	737	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			326			356	737	325	406	357	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	89	95	100	100	100
cM capacity (veh/h)	1151			596			591	340	716	481	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	381	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	381	33
cSH	1151	1700	596	1700	453
Volume to Capacity	0.01	0.19	0.01	0.22	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.2	0.0	11.1	0.0	14.4
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.1		14.4
Approach LOS					B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/12/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	39	0	2	0	0	0	31	50	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	0	2	0	0	0	36	59	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		112	94	0	170	93	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		112	94	0	170	93	1
tC, single (s)	4.2			4.1		7.2	6.6	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	95	100	95	100
cM capacity (veh/h)	1554			1620		809	767	1076	711	777	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	48	0	95	40
Volume Left	46	0	0	2
Volume Right	2	0	59	0
cSH	1554	1700	932	773
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	332	4	15	450	31	10	7	24	32	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1770			1844			1759	1538		1747	
Flt Permitted		0.98			0.99			0.79	1.00		0.80	
Satd. Flow (perm)		1744			1824			1429	1538		1446	
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)	12	357	4	16	484	33	11	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	373	0	0	531	0	0	19	3	0	44	0
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		24.1			24.1			4.3	4.3		4.3	
Effective Green, g (s)		24.6			24.6			4.8	4.8		4.8	
Actuated g/C Ratio		0.66			0.66			0.13	0.13		0.13	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1147			1200			183	197		186	
v/s Ratio Prot												
v/s Ratio Perm		0.21			c0.29			0.01	0.00		c0.03	
v/c Ratio		0.32			0.44			0.10	0.02		0.24	
Uniform Delay, d1		2.8			3.1			14.4	14.2		14.7	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.3	0.0		0.7	
Delay (s)		3.0			3.4			14.7	14.3		15.3	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.0			3.4			14.4			15.3	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	37.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	2	262	19	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	203	17	2	298	22	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			220		506	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					302	
vCu, unblocked vol			220		506	203
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		97	100
cM capacity (veh/h)			1355		655	808

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	2	298	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1355	1700	672
Volume to Capacity	0.12	0.01	0.00	0.18	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.6
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.6
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	1207	11	0	0	0	0	55	24	16	81	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3343						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3343						3240			3066	
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)	128	1298	12	0	0	0	0	59	26	17	87	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1438	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2622						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.43									c0.03	
v/c Ratio		0.55						0.19			0.33	
Uniform Delay, d1		2.9						28.8			29.3	
Progression Factor		1.00						1.00			0.59	
Incremental Delay, d2		0.8						0.3			0.6	
Delay (s)		3.7						29.1			17.8	
Level of Service		A						C			B	
Approach Delay (s)		3.7			0.0			29.1			17.8	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1180	64	0	0	0	0	80	121	77	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3335						1711			1621	
Flt Permitted		1.00						1.00			0.73	
Satd. Flow (perm)		3335						1711			1204	
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)	18	1388	75	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	1477	0	0	0	0	0	211	0	0	187	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		30.4						14.8			14.8	
Effective Green, g (s)		30.4						14.8			14.8	
Actuated g/C Ratio		0.57						0.28			0.28	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1906						476			335	
v/s Ratio Prot								0.12				
v/s Ratio Perm		0.44									c0.16	
v/c Ratio		0.77						0.44			0.56	
Uniform Delay, d1		8.8						15.8			16.4	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.0						0.7			2.0	
Delay (s)		10.7						16.5			18.4	
Level of Service		B						B			B	
Approach Delay (s)		10.7			0.0			16.5			18.4	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	53.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1167	18	0	0	0	0	25	24	25	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3351						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3351						1597			1355	
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)	23	1203	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1244	0	0	0	0	0	29	0	0	55	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		30.8						4.5			4.5	
Effective Green, g (s)		31.3						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2368						180			153	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.37									c0.04	
v/c Ratio		0.53						0.16			0.36	
Uniform Delay, d1		3.0						17.8			18.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.4			1.4	
Delay (s)		3.2						18.2			19.6	
Level of Service		A						B			B	
Approach Delay (s)		3.2			0.0			18.2			19.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	44.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.7%	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 (veh/h)	47	1191	19	0	0	0	0	31	36	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	48	1228	20	0	0	0	0	32	37	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1247			1358	1335	624	764	1344	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1247			1358	1335	624	764	1344	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	78	91	79	69	100
cM capacity (veh/h)	1607			554			79	147	426	220	148	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	662	634	69	92
Volume Left	48	0	0	45
Volume Right	0	20	37	0
cSH	1607	1700	226	177
Volume to Capacity	0.03	0.37	0.31	0.52
Queue Length 95th (ft)	2	0	31	65
Control Delay (s)	0.9	0.0	27.7	45.4
Lane LOS	A		D	E
Approach Delay (s)	0.4		27.7	45.4
Approach LOS			D	E

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	859	12	0	0	0	0	415	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3323						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	934	13	0	0	0	0	451	9	0	0	0
RTOR Reduction (vph)	54	2	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	54	945	0	0	0	0	0	458	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	19.0	19.0						11.1				
Effective Green, g (s)	20.0	20.0						12.1				
Actuated g/C Ratio	0.50	0.50						0.30				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	874	1657						1054				
v/s Ratio Prot		c0.28						c0.13				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.57						0.43				
Uniform Delay, d1	5.2	7.0						11.3				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.5						0.3				
Delay (s)	5.2	7.5						11.5				
Level of Service	A	A						B				
Approach Delay (s)		7.3			0.0			11.5			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1076	70	0	0	0	0	27	171	41	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1575	1504		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.75	
Satd. Flow (perm)		2893	1300					1575	1504		1393	
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)	18	1157	75	0	0	0	0	29	184	44	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	47	47	0	0	0
Lane Group Flow (vph)	0	1175	66	0	0	0	0	61	58	0	78	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.2	53.2					7.8	7.8		7.8	
Effective Green, g (s)		53.7	53.7					8.3	8.3		8.3	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2219	997					187	178		165	
v/s Ratio Prot		c0.41						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.53	0.07					0.33	0.33		0.47	
Uniform Delay, d1		3.2	2.0					28.3	28.3		28.8	
Progression Factor		0.31	0.29					1.00	1.00		1.00	
Incremental Delay, d2		0.8	0.1					1.0	1.1		2.1	
Delay (s)		1.8	0.7					29.3	29.4		30.9	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.7			0.0			29.3			30.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1047	24	0	0	0	0	12	86	7	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2882						1314			1462	
Flt Permitted		1.00						1.00			0.87	
Satd. Flow (perm)		2882						1314			1291	
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)	24	1102	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	56	0	0	0	0
Lane Group Flow (vph)	0	1150	0	0	0	0	0	48	0	0	18	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.8						7.2			7.2	
Effective Green, g (s)		54.8						7.2			7.2	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2256						135			133	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.40									0.01	
v/c Ratio		0.51						0.36			0.14	
Uniform Delay, d1		2.7						29.2			28.6	
Progression Factor		0.39						1.00			1.00	
Incremental Delay, d2		0.6						1.6			0.5	
Delay (s)		1.7						30.9			29.0	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			30.9			29.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	906	16	0	0	0	0	0	29	289	216	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2887							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2887							1289	1681	1405	
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)	0	954	17	0	0	0	0	0	31	304	227	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	178	9	0
Lane Group Flow (vph)	0	969	0	0	0	0	0	0	4	83	261	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		28.6							9.5	18.4	18.4	
Effective Green, g (s)		29.1							10.0	18.9	18.9	
Actuated g/C Ratio		0.42							0.14	0.27	0.27	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1200							184	454	379	
v/s Ratio Prot		c0.34							c0.00	0.05	c0.19	
v/s Ratio Perm												
v/c Ratio		0.81							0.02	0.18	0.69	
Uniform Delay, d1		18.0							25.8	19.6	22.9	
Progression Factor		1.09							1.00	1.00	1.00	
Incremental Delay, d2		5.5							0.2	0.9	9.8	
Delay (s)		25.1							26.0	20.5	32.7	
Level of Service		C							C	C	C	
Approach Delay (s)		25.1			0.0			26.0			26.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	25.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	383	12	0	0	0	0	45	25	460	47	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2879						1418		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2879						1418		1681	1360	
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)	7	407	13	0	0	0	0	48	27	489	50	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	424	0	0	0	0	0	51	0	269	270	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		17.6						6.9		32.0	32.0	
Effective Green, g (s)		18.1						7.4		32.5	32.5	
Actuated g/C Ratio		0.26						0.11		0.46	0.46	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		744						150		780	631	
v/s Ratio Prot								c0.04		0.16	c0.20	
v/s Ratio Perm		0.15										
v/c Ratio		0.57						0.34		0.34	0.43	
Uniform Delay, d1		22.6						29.0		12.0	12.5	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.0						1.3		1.2	2.1	
Delay (s)		23.6						30.4		13.2	14.7	
Level of Service		C						C		B	B	
Approach Delay (s)		23.6			0.0			30.4			13.9	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	309	0	517	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1791		2111		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1791		2111		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	343	0	574	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	343	0	574	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		29.3		29.3		
Effective Green, g (s)		29.3		29.3		
Actuated g/C Ratio		0.74		0.74		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1332		1570		
v/s Ratio Prot		0.19		c0.27		
v/s Ratio Perm						
v/c Ratio		0.26		0.37		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.1		
Delay (s)		1.7		1.9		
Level of Service		A		A		
Approach Delay (s)	1.7			1.9	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	39.4	Sum of lost time (s)	10.1
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
450: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Market Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	894	22	18	163	0	0	90	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3490			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3490			3041			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	931	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	78	0
Lane Group Flow (vph)	0	0	0	0	967	0	0	189	0	0	269	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					49.1			11.9			11.9	
Effective Green, g (s)					49.6			12.4			12.4	
Actuated g/C Ratio					0.71			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2473			539			531	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.28			0.06				
v/c Ratio					0.39			0.35			0.51	
Uniform Delay, d1					4.1			25.3			26.0	
Progression Factor					1.16			1.04			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					5.2			26.6			26.8	
Level of Service					A			C			C	
Approach Delay (s)		0.0			5.2			26.6			26.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1196	19	13	381	0	0	51	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
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3353			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3353			1679			1710	1615
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)	0	0	0	15	1272	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	50
Lane Group Flow (vph)	0	0	0	0	1305	0	0	419	0	0	54	240
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2060			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.39			c0.25				0.15
v/c Ratio					0.63			0.92			0.12	0.55
Uniform Delay, d1					8.5			24.8			19.2	21.8
Progression Factor					0.67			1.00			1.00	1.00
Incremental Delay, d2					1.4			26.1			0.5	4.9
Delay (s)					7.2			50.8			19.7	26.7
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.2			50.8			25.6	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	70.0	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)	0	0	0	44	1120	92	32	68	0	0	211	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3567	1554		1815			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3567	1554		1551			1794	
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)	0	0	0	46	1179	97	34	72	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1225	54	0	106	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					29.0	29.0		14.7			14.7	
Effective Green, g (s)					29.0	29.0		14.7			14.7	
Actuated g/C Ratio					0.56	0.56		0.28			0.28	
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)					2001	872		441			510	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.34	0.04		0.07				
v/c Ratio					0.61	0.06		0.24			0.59	
Uniform Delay, d1					7.6	5.2		14.2			15.9	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.3			1.7	
Delay (s)					8.2	5.2		14.5			17.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			7.9			14.5			17.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	51.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1280	5	18	7	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.96			1.00	
Satd. Flow (prot)					3324			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3324			1676			1777	
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)	0	0	0	35	1362	5	19	7	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1402	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.9			1.3			1.3	
Effective Green, g (s)					30.4			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2514			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.42			c0.02				
v/c Ratio					0.56			0.35			0.29	
Uniform Delay, d1					2.1			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			2.8			2.0	
Delay (s)					2.3			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.3			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	42	1171	12	52	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	46	1287	13	57	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1300			0			758	1392	0	1393	1386	650
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1300			0			758	1392	0	1393	1386	650
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			77	90	100	100	86	97
cM capacity (veh/h)	529			1622			251	137	1084	93	140	417

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	690	657	71	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	215	188
Volume to Capacity	0.03	0.39	0.33	0.17
Queue Length 95th (ft)	2	0	35	15
Control Delay (s)	0.8	0.0	29.8	28.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		29.8	28.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1159	2	471	23	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3361		1618	1630				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1618	1630				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1302	2	529	26	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	158	158	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1304	0	117	122	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					26.4		10.0	10.0				0.6
Effective Green, g (s)					27.4		11.0	11.0				1.6
Actuated g/C Ratio					0.53		0.21	0.21				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1771		342	345				50
v/s Ratio Prot					c0.39							
v/s Ratio Perm							0.07	0.08				c0.00
v/c Ratio					0.74		0.34	0.35				0.00
Uniform Delay, d1					9.5		17.4	17.5				24.4
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.6		0.6	0.6				0.0
Delay (s)					11.1		18.0	18.1				24.5
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.1			18.1			24.5	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations			↑↑	↱		↱
Volume (veh/h)	0	0	1222	184	0	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1286	194	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1286				1286	643
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1286				1286	643
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	78
cM capacity (veh/h)	535				153	411

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	643	643	194	89
Volume Left	0	0	0	0
Volume Right	0	0	194	89
cSH	1700	1700	1700	411
Volume to Capacity	0.38	0.38	0.11	0.22
Queue Length 95th (ft)	0	0	0	20
Control Delay (s)	0.0	0.0	0.0	16.2
Lane LOS				C
Approach Delay (s)	0.0			16.2
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	474	1066	0	0	8	98	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	489	1099	0	0	8	101	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			489	489	489	1588	1588	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			489	489	489	1588	1588	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	6	100	
cM capacity (veh/h)			480	579	490	108	413	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	855	733	8	101
Volume Left	0	0	8	0
Volume Right	366	733	0	0
cSH	1700	1700	490	108
Volume to Capacity	0.50	0.43	0.02	0.94
Queue Length 95th (ft)	0	0	1	144
Control Delay (s)	0.0	0.0	12.5	143.6
Lane LOS			B	F
Approach Delay (s)	0.0		133.7	
Approach LOS			F	

Intersection Summary			
Average Delay	8.6		
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	52	0	0	1186	0	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	0	0	1289	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	0	0	1289	0	508
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.3			46.7		69.0
Effective Green, g (s)	13.8			47.2		69.0
Actuated g/C Ratio	0.20			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	354			2398		2787
v/s Ratio Prot	0.03			c0.37		
v/s Ratio Perm						c0.18
v/c Ratio	0.16			0.54		0.18
Uniform Delay, d1	22.8			5.4		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.8		0.1
Delay (s)	22.9			6.3		0.1
Level of Service	C			A		A
Approach Delay (s)	22.9			6.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	609	577	467	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1694	1845	3467	
Flt Permitted			0.39	1.00	1.00	
Satd. Flow (perm)			695	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	634	601	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	634	601	518	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			49.8	54.3	25.2	
Effective Green, g (s)			50.8	54.8	25.7	
Actuated g/C Ratio			0.74	0.79	0.37	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			875	1465	1291	
v/s Ratio Prot			c0.26	0.33	0.15	
v/s Ratio Perm			c0.27			
v/c Ratio			0.72	0.41	0.40	
Uniform Delay, d1			4.3	2.2	16.0	
Progression Factor			0.45	0.08	1.00	
Incremental Delay, d2			2.2	0.7	0.1	
Delay (s)			4.2	0.9	16.1	
Level of Service			A	A	B	
Approach Delay (s)	0.0			2.6	16.1	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	947	218	0	0	0	21	0	532	257	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.95				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2364				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2364				
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)	1018	234	0	0	0	23	0	572	276	0	0	0
RTOR Reduction (vph)	359	91	0	0	0	23	0	57	0	0	0	0
Lane Group Flow (vph)	262	540	0	0	0	0	0	791	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	15%	41%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	24.2	24.2				2.4		31.4				
Effective Green, g (s)	24.7	24.7				1.4		31.9				
Actuated g/C Ratio	0.35	0.35				0.02		0.46				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	571	587				26		1077				
v/s Ratio Prot								c0.33				
v/s Ratio Perm	0.16	0.33				c0.00						
v/c Ratio	0.46	0.92				0.02		0.73				
Uniform Delay, d1	17.5	21.7				33.6		15.6				
Progression Factor	1.26	0.33				1.00		1.00				
Incremental Delay, d2	1.4	13.8				0.1		2.6				
Delay (s)	23.4	21.0				33.7		18.2				
Level of Service	C	C				C		B				
Approach Delay (s)		22.2			33.7			18.2			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	21	0	0	272	18	95	1413	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1386			4786				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1264			1386			4786				
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)	17	22	0	0	286	19	100	1487	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	301	0	0	1593	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	38%	5%	38%	6%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.7			20.7			40.3				
Effective Green, g (s)		21.2			21.2			40.8				
Actuated g/C Ratio		0.30			0.30			0.58				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		383			420			2790				
v/s Ratio Prot					c0.22							
v/s Ratio Perm		0.03						0.33				
v/c Ratio		0.10			0.72			0.57				
Uniform Delay, d1		17.6			21.7			9.1				
Progression Factor		0.71			1.00			0.87				
Incremental Delay, d2		0.1			5.7			0.6				
Delay (s)		12.6			27.5			8.5				
Level of Service		B			C			A				
Approach Delay (s)		12.6			27.5			8.5			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	64	1465	96	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1712	1504		4522				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4522				
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)	95	152	0	0	86	120	67	1542	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	24	0	9	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	72	0	1701	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	6%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.3			17.3	17.3		44.2				
Effective Green, g (s)		17.8			17.8	17.8		44.2				
Actuated g/C Ratio		0.25			0.25	0.25		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		316			435	382		2855				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.38				
v/c Ratio		0.78			0.22	0.19		0.60				
Uniform Delay, d1		24.3			20.6	20.4		7.6				
Progression Factor		0.96			1.00	1.00		1.94				
Incremental Delay, d2		11.3			0.3	0.2		0.8				
Delay (s)		34.6			20.9	20.7		15.6				
Level of Service		C			C	C		B				
Approach Delay (s)		34.6			20.8			15.6			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	76	31	0	0	71	32	28	1461	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1785			4381				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4381				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	87	36	0	0	82	37	32	1679	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	19	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	100	0	0	1760	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.5			11.5			50.0				
Effective Green, g (s)		12.0			12.0			50.0				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		227			306			3129				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.09						0.40				
v/c Ratio		0.54			0.33			0.56				
Uniform Delay, d1		26.5			25.5			4.8				
Progression Factor		1.61			1.00			0.26				
Incremental Delay, d2		2.6			0.6			0.6				
Delay (s)		45.1			26.1			1.8				
Level of Service		D			C			A				
Approach Delay (s)		45.1			26.1			1.8			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	233	25	0	0	32	18	54	1635	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4390				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4390				
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)	248	27	0	0	34	19	57	1739	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	275	0	0	42	0	0	1816	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.4			20.4			39.6				
Effective Green, g (s)		20.9			20.9			41.1				
Actuated g/C Ratio		0.30			0.30			0.59				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		315			423			2578				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.41				
v/c Ratio		0.87			0.10			0.70				
Uniform Delay, d1		23.3			17.7			10.2				
Progression Factor		0.67			1.00			0.59				
Incremental Delay, d2		22.1			0.1			1.4				
Delay (s)		37.7			17.8			7.4				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.8			7.4			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1607	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1374			4395				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1374			4395				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	60	17	0	0	8	11	25	1826	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	9	0	0	1868	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		151			183			3309				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.43				
v/c Ratio		0.51			0.05			0.56				
Uniform Delay, d1		28.2			26.5			3.7				
Progression Factor		0.82			1.00			0.26				
Incremental Delay, d2		2.6			0.1			0.5				
Delay (s)		25.9			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		25.9			26.6			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	56	37	34	35	0	0	0	0	17	1314	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4426	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1185						4426	
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)	0	62	41	38	39	0	0	0	0	19	1460	40
RTOR Reduction (vph)	0	35	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	68	0	0	77	0	0	0	0	0	1517	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.5			8.5						53.0	
Effective Green, g (s)		9.0			9.0						53.0	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		181			152						3351	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.06						0.34	
v/c Ratio		0.38			0.51						0.45	
Uniform Delay, d1		27.9			28.4						3.1	
Progression Factor		1.00			0.94						0.69	
Incremental Delay, d2		1.3			2.6						0.4	
Delay (s)		29.2			29.4						2.6	
Level of Service		C			C						A	
Approach Delay (s)		29.2			29.4			0.0			2.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	145	35	24	68	0	0	0	0	8	1173	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1451			1471						4404	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1451			1325						4404	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	158	38	26	74	0	0	0	0	9	1275	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	100	0	0	0	0	0	1361	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		13.9			13.9						46.1	
Effective Green, g (s)		14.4			14.4						47.6	
Actuated g/C Ratio		0.21			0.21						0.68	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		298			273						2995	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.08						0.31	
v/c Ratio		0.61			0.37						0.45	
Uniform Delay, d1		25.2			23.9						5.2	
Progression Factor		1.00			0.95						0.26	
Incremental Delay, d2		3.5			0.8						0.5	
Delay (s)		28.7			23.5						1.8	
Level of Service		C			C						A	
Approach Delay (s)		28.7			23.5			0.0			1.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1188	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1448			1471						4429	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1448			1339						4429	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	82	22	17	49	0	0	0	0	21	1291	27
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	87	0	0	66	0	0	0	0	0	1337	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.4			8.4						53.1	
Effective Green, g (s)		8.9			8.9						53.1	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		184			170						3360	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.30	
v/c Ratio		0.47			0.39						0.40	
Uniform Delay, d1		28.4			28.1						2.9	
Progression Factor		1.00			0.55						0.24	
Incremental Delay, d2		1.9			1.4						0.3	
Delay (s)		30.3			16.9						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.3			16.9			0.0			1.0	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	104	15	57	84	0	0	0	0	131	1051	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						0.99	
Satd. Flow (prot)		1831			1826						4531	
Flt Permitted		1.00			0.85						0.99	
Satd. Flow (perm)		1831			1577						4531	
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)	0	109	16	60	88	0	0	0	0	138	1106	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	148	0	0	0	0	0	1273	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		536			462						2686	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.28	
v/c Ratio		0.22			0.32						0.47	
Uniform Delay, d1		18.7			19.3						8.1	
Progression Factor		1.00			0.98						0.86	
Incremental Delay, d2		0.9			1.7						0.6	
Delay (s)		19.6			20.6						7.5	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.6			0.0			7.5	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	142	213	0	0	0	0	21	349	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.92	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					1025						2476	1400
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					1025						2476	1400
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)	0	0	0	151	227	0	0	0	0	22	371	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	215	215
Lane Group Flow (vph)	0	0	0	0	378	0	0	0	0	0	585	192
Heavy Vehicles (%)	2%	2%	2%	88%	17%	2%	2%	2%	2%	0%	15%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					28.4						32.6	32.6
Effective Green, g (s)					28.9						33.1	33.1
Actuated g/C Ratio					0.41						0.47	0.47
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					423						1171	662
v/s Ratio Prot												
v/s Ratio Perm					0.37						0.24	0.14
v/c Ratio					0.89						0.50	0.29
Uniform Delay, d1					19.1						12.7	11.3
Progression Factor					0.99						0.21	0.19
Incremental Delay, d2					18.5						1.4	1.0
Delay (s)					37.4						4.0	3.1
Level of Service					D						A	A
Approach Delay (s)		0.0			37.4			0.0			3.7	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1109	72	0	0	0	0	0	0	19	452	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		0.99									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3000									2343	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3000									2343	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1275	83	0	0	0	0	0	0	22	520	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	1353	0	0	0	0	0	0	0	0	537	0
Heavy Vehicles (%)	0%	4%	58%	2%	2%	2%	2%	2%	2%	0%	32%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		37.6									23.4	
Effective Green, g (s)		38.1									23.9	
Actuated g/C Ratio		0.54									0.34	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1633									800	
v/s Ratio Prot		c0.45										
v/s Ratio Perm											0.23	
v/c Ratio		0.83									0.67	
Uniform Delay, d1		13.2									19.7	
Progression Factor		0.80									1.32	
Incremental Delay, d2		4.3									1.7	
Delay (s)		14.8									27.8	
Level of Service		B									C	
Approach Delay (s)		14.8			0.0			0.0			27.8	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1461	397	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1242			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1242			
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)	124	692	0	0	0	0	0	1538	418	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	804	0	0	0	0	0	1538	381	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	4%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		18.8						42.7	42.7			
Effective Green, g (s)		18.8						43.2	43.2			
Actuated g/C Ratio		0.27						0.62	0.62			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1229						1892	766			
v/s Ratio Prot								c0.50				
v/s Ratio Perm		0.18							0.31			
v/c Ratio		0.65						0.81	0.50			
Uniform Delay, d1		22.7						10.3	7.4			
Progression Factor		0.88						1.87	2.15			
Incremental Delay, d2		1.2						3.4	2.0			
Delay (s)		21.2						22.7	17.9			
Level of Service		C						C	B			
Approach Delay (s)		21.2			0.0			21.7			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	553	411	76	1407	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3254			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3254			2943				
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)	0	0	0	0	570	424	78	1451	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	976	0	0	1524	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					23.4			37.6				
Effective Green, g (s)					23.9			38.1				
Actuated g/C Ratio					0.34			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1111			1602				
v/s Ratio Prot					c0.30							
v/s Ratio Perm								0.52				
v/c Ratio					0.88			0.95				
Uniform Delay, d1					21.7			15.1				
Progression Factor					1.00			0.76				
Incremental Delay, d2					8.1			9.1				
Delay (s)					29.7			20.6				
Level of Service					C			C				
Approach Delay (s)		0.0			29.7			20.6			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1118	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2948									4361	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4361	
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)	0	290	45	0	0	0	0	0	0	394	1202	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	57	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1539	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.7									48.3	
Effective Green, g (s)		13.2									48.8	
Actuated g/C Ratio		0.19									0.70	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		556									3040	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.35	
v/c Ratio		0.56									0.51	
Uniform Delay, d1		25.8									5.0	
Progression Factor		1.00									0.65	
Incremental Delay, d2		1.3									0.5	
Delay (s)		27.1									3.8	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			3.8	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	324	296	0	0	0	0	0	1272	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.99						1.00	
Satd. Flow (prot)				1264	3277						4415	
Flt Permitted				0.95	0.99						1.00	
Satd. Flow (perm)				1264	3277						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	352	322	0	0	0	0	0	1383	68
RTOR Reduction (vph)	0	0	0	25	25	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	193	431	0	0	0	0	0	1445	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				16.8	16.8						44.2	
Effective Green, g (s)				17.3	17.3						44.7	
Actuated g/C Ratio				0.25	0.25						0.64	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				312	810						2819	
v/s Ratio Prot				c0.15	0.13						c0.33	
v/s Ratio Perm												
v/c Ratio				0.62	0.53						0.51	
Uniform Delay, d1				23.4	22.8						6.8	
Progression Factor				1.20	1.25						1.00	
Incremental Delay, d2				1.9	0.4						0.7	
Delay (s)				30.0	29.0						7.5	
Level of Service				C	C						A	
Approach Delay (s)		0.0			29.3			0.0			7.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
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)	11	1238	36	28	1027	2	349	8	18	17	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.98	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3311		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3125		1727	3311		1681	1672			1762	
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)	13	1456	42	33	1208	2	411	9	21	20	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1510	0	33	1210	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	9%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.3		5.4	80.7		17.3	17.3			5.0	
Effective Green, g (s)		72.3		5.4	81.7		18.3	18.3			6.0	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1915		79	2292		261	259			90	
v/s Ratio Prot				0.02	c0.37		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.53		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.8		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.56		1.00	1.00			1.00	
Incremental Delay, d2		3.4		2.8	0.7		22.4	19.9			1.7	
Delay (s)		20.5		59.5	5.6		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.5			7.0			69.6			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1575	102	53	1079	0	215	8	109	51	19	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3312		1727	3312		1665	1552			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3312		1727	3312		1665	1552			1751	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	1641	106	55	1124	0	224	8	114	53	20	25
RTOR Reduction (vph)	0	3	0	0	0	0	0	66	0	0	13	0
Lane Group Flow (vph)	26	1744	0	55	1124	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	9%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.3		7.6	66.3		14.5	14.5			11.6	
Effective Green, g (s)	6.6	66.3		7.6	67.3		15.5	15.5			12.6	
Actuated g/C Ratio	0.06	0.56		0.06	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1861		111	1889		219	204			187	
v/s Ratio Prot	0.02	c0.53		0.03	c0.34		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.27	0.94		0.50	0.60		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.9		53.3	16.5		49.9	47.6			49.5	
Progression Factor	0.78	0.60		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	8.6		2.5	1.4		21.0	2.2			2.1	
Delay (s)	42.3	22.9		55.9	17.9		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		23.2			19.6			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	913	3	516	853	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.93	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3260		3038	1517		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3260		3038	1517		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1127	4	637	1053	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1131	0	1153	537	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	13%	7%	7%	14%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	36.2		38.0	86.2		38.0
Effective Green, g (s)	38.2		40.0	86.2		40.0
Actuated g/C Ratio	0.44		0.46	1.00		0.46
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1445		1410	1517		1232
v/s Ratio Prot	c0.35		c0.38	0.35		0.14
v/s Ratio Perm						
v/c Ratio	0.78		0.82	0.35		0.31
Uniform Delay, d1	20.5		20.0	0.0		14.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	2.7		3.7	0.6		0.1
Delay (s)	23.2		23.7	0.6		14.5
Level of Service	C		C	A		B
Approach Delay (s)	23.2		16.4		14.5	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	86.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	20	0	0	8	19	635	1	3	340	55
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	21	0	0	8	20	668	1	3	358	58
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1117	1110	394	1096	1138	671	422			670		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1117	1110	394	1096	1138	671	422			670		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	178	205	655	182	197	459	1136			919		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	676	3	416
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	655	459	1136	1136	919	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.24
Queue Length 95th (ft)	2	1	1	1	0	0
Control Delay (s)	10.7	13.0	8.2	0.3	8.9	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.0	0.5		0.1	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	38.6%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
332: S M Street & W State Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	24	1	10	0	2	4	14	590	2	2	292	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	26	1	11	0	2	4	15	634	2	2	314	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1004	1001	330	995	1015	635	345			637		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1004	1001	330	995	1015	635	345			637		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	98	100	99	99	99			100		
cM capacity (veh/h)	216	240	714	218	236	480	1219			947		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	637	2	345
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	270	357	1219	1700	947	1700
Volume to Capacity	0.14	0.02	0.01	0.37	0.00	0.20
Queue Length 95th (ft)	12	1	1	0	0	0
Control Delay (s)	20.5	15.3	8.0	0.0	8.8	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	20.5	15.3	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	2	507	2	2	222	278
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	2	583	2	2	255	320
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1014	1009	415	852	1168	584	575			585		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1014	1009	415	852	1168	584	575			585		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	90	100	99	100	97	99	100			100		
cM capacity (veh/h)	211	241	642	267	185	495	1008			1000		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	585	2	575
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	320
cSH	232	257	1008	1700	1000	1700
Volume to Capacity	0.11	0.04	0.00	0.34	0.00	0.34
Queue Length 95th (ft)	9	3	0	0	0	0
Control Delay (s)	22.4	19.6	8.6	0.0	8.6	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	22.4	19.6	0.0		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	484	30	0	0	0	1	82	1	2	227	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	509	32	0	0	0	1	86	1	2	239	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			541			659	525	525	569	541	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			541			659	525	525	569	541	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	81	100	99	47	99
cM capacity (veh/h)	1604			1038			216	459	554	369	448	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	541	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	454	463
Volume to Capacity	0.00	0.00	0.19	0.55
Queue Length 95th (ft)	0	0	18	82
Control Delay (s)	0.0	0.0	14.8	22.0
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	14.8	22.0
Approach LOS			B	C

Intersection Summary			
Average Delay	7.8		
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	573	8	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	599	1	3	616	9	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1222	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1222	599
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		95	99
cM capacity (veh/h)			948		159	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	619	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	181
Volume to Capacity	0.35	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	26.1
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	26.1
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	550	0	2	598	10	0	1	0	8	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	598	0	2	650	11	0	1	0	9	2	8
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			601			1288	1284	603	1279	1279	657
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			601			1288	1284	603	1279	1279	657
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	94	99	98
cM capacity (veh/h)	912			959			136	164	500	138	161	457

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	663	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	912	959	164	198
Volume to Capacity	0.01	0.00	0.01	0.09
Queue Length 95th (ft)	1	0	1	8
Control Delay (s)	0.3	0.1	27.1	25.1
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	27.1	25.1
Approach LOS			D	D

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	553	1	1	593	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	601	1	1	645	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	646			602			1252	1252	602	1252	1252	645
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	646			602			1252	1252	602	1252	1252	645
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	99	100	100
cM capacity (veh/h)	925			961			148	172	500	148	172	472

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	603	647	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	925	961	229	226
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	20.9	21.1
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	20.9	21.1
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	468	34	186	468	11	76	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	514	37	204	514	12	84	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			552			1599	1571	535	1570	1584	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			552			1599	1571	535	1570	1584	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			70			0	97	100	71	98	94
cM capacity (veh/h)	1021			691			60	75	548	65	72	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	602	731	88	54
Volume Left	51	204	84	19
Volume Right	37	12	2	34
cSH	1021	691	61	147
Volume to Capacity	0.05	0.30	1.43	0.37
Queue Length 95th (ft)	4	31	191	38
Control Delay (s)	1.3	7.3	379.5	43.0
Lane LOS	A	A	F	E
Approach Delay (s)	1.3	7.3	379.5	43.0
Approach LOS			F	E

Intersection Summary			
Average Delay	28.3		
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	487	0	0	27	664
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	529	0	0	29	722
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			780	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			780	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			357	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	529	29	722
Volume Left	0	29	0
Volume Right	529	0	0
cSH	1700	1578	1700
Volume to Capacity	0.31	0.02	0.42
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	500	5	0	354	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	549	5	0	389	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1102	1102	1104	0
vC1, stage 1 conf vol			1102	1102	0	
vC2, stage 2 conf vol			0	0	1104	
vCu, unblocked vol	0		1102	1102	1104	0
tC, single (s)	4.2		7.1	6.8	6.5	6.2
tC, 2 stage (s)			6.1	5.8	5.5	
tF (s)	2.3		3.5	4.3	4.0	3.3
p0 queue free %	65		100	0	100	100
cM capacity (veh/h)	1585		152	143	168	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	366	189	389
Volume Left	366	183	0
Volume Right	0	5	0
cSH	1585	1585	143
Volume to Capacity	0.35	0.35	2.73
Queue Length 95th (ft)	39	39	874
Control Delay (s)	8.5	8.3	846.0
Lane LOS	A	A	F
Approach Delay (s)	8.4		846.0
Approach LOS			F

Intersection Summary			
Average Delay	353.6		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	21	3	0	0	169	7	12	830	20	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	3	0	0	192	8	14	943	23	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	603	993	0	984	982	483	0			966		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	603	993	0	984	982	483	0			966		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	99	100	100	22	99	99			100		
cM capacity (veh/h)	136	245	1091	201	247	532	1600			709		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	485	494
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	144	253	1600	1700
Volume to Capacity	0.19	0.79	0.01	0.29
Queue Length 95th (ft)	17	149	1	0
Control Delay (s)	35.6	57.6	0.3	0.0
Lane LOS	E	F	A	
Approach Delay (s)	35.6	57.6	0.1	
Approach LOS	E	F		

Intersection Summary			
Average Delay	10.5		
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
357: N Lincoln Street & W Heron Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	6	0	0	16	2	5	844	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	6	0	0	17	2	5	879	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	460	895	2	897	892	442	0			884		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460	895	2	897	892	442	0			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	94	100	100			100		
cM capacity (veh/h)	464	281	1086	233	282	569	1593			761		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	445	445
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	357	299	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.26
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	15.5	17.8	0.1	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.5	17.8	0.1	
Approach LOS	C	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	31	797	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	105	9	36	927	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	600	1013	4	1011	1009	471	3			938		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600	1013	4	1011	1009	471	3			938		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	94	97	100	100	49	98	98			100		
cM capacity (veh/h)	200	204	1019	162	205	492	1592			724		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	499	470
Volume Left	12	0	36	0
Volume Right	0	9	0	7
cSH	202	215	1592	1700
Volume to Capacity	0.09	0.53	0.02	0.28
Queue Length 95th (ft)	8	69	2	0
Control Delay (s)	24.7	39.2	0.7	0.0
Lane LOS	C	E	A	
Approach Delay (s)	24.7	39.2	0.4	
Approach LOS	C	E		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
359: N Washington Street & W Wishkah Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	34	0	0	0	0	3	509	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	4	100	40	0	0	0	0	4	606	10
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	641	628	311	328	633	7	618			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	363	348	0	13	353	7	338			7		
tC, single (s)	7.8	6.8	7.2	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.4	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	92	100	100			100		
cM capacity (veh/h)	446	483	931	852	501	1055	1087			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	140	307	312
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	535	709	1541	1700
Volume to Capacity	0.03	0.20	0.00	0.18
Queue Length 95th (ft)	3	18	0	0
Control Delay (s)	12.0	11.3	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	11.3	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.4		
Intersection Capacity Utilization		36.2%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	570	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	613	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	650	642	315	340	648	4	626			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	642	315	340	648	4	626			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	347	392	687	575	389	1080	952			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	317	319
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	418	481	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.9	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.9	13.0	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		35.1%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	525	65	0	30	1	121	41	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	559	69	0	32	1	129	44	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	628			0			643	621	316	326	655	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628			0			643	621	316	326	655	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	77	89	100
cM capacity (veh/h)	950			1565			329	403	686	565	383	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	293	348	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	408	504
Volume to Capacity	0.01	0.20	0.08	0.34
Queue Length 95th (ft)	1	0	7	38
Control Delay (s)	0.4	0.0	14.6	15.8
Lane LOS	A		B	C
Approach Delay (s)	0.2		14.6	15.8
Approach LOS			B	C

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
362: S Division Street & W Heron Street

8/12/2009

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	176	70	338	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	191	76	367	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	240			29			165	174	145	349	261	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240			29			165	174	145	349	261	21
tC, single (s)	4.1			4.1			7.1	6.8	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.3	3.3	3.6	4.1	3.4
p0 queue free %	100			100			91	45	100	98	100	100
cM capacity (veh/h)	1326			1584			804	664	908	334	634	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	240	443	5
Volume Left	0	0	76	5
Volume Right	17	191	0	0
cSH	1326	1584	684	334
Volume to Capacity	0.00	0.00	0.65	0.02
Queue Length 95th (ft)	0	0	119	1
Control Delay (s)	0.0	0.0	19.4	16.0
Lane LOS			C	C
Approach Delay (s)	0.0	0.0	19.4	16.0
Approach LOS			C	C

Intersection Summary			
Average Delay	12.1		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	80	220	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	87	239	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	329	240	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	329	240	240			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	665	799	1338			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	88	240
Volume Left	1	1	0
Volume Right	1	0	1
cSH	726	1338	1700
Volume to Capacity	0.00	0.00	0.14
Queue Length 95th (ft)	0	0	0
Control Delay (s)	10.0	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	10.0	0.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	507	6	16	3	5	5	0	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	39	452	5	5	583	7	18	3	6	6	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	583			456			1172	1124	454	1133	1130	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			456			1172	1124	454	1133	1130	586
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			87	98	99	96	100	90
cM capacity (veh/h)	949			1115			141	189	588	163	187	494

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	590	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	949	1700	1115	1700	174	406
Volume to Capacity	0.04	0.27	0.00	0.35	0.16	0.13
Queue Length 95th (ft)	3	0	0	0	14	11
Control Delay (s)	9.0	0.0	8.2	0.0	29.5	15.2
Lane LOS	A		A		D	C
Approach Delay (s)	0.7		0.1		29.5	15.2
Approach LOS					D	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	446	110	8	14	38	52	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	361	11	16	485	120	9	15	41	57	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	604			372			1013	1040	366	1029	986	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	604			372			1013	1040	366	1029	986	545
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			95	93	94	69	97	95
cM capacity (veh/h)	936			1144			186	212	653	184	240	541

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	621	65	92
Volume Left	18	16	9	57
Volume Right	11	120	41	29
cSH	936	1144	359	237
Volume to Capacity	0.02	0.01	0.18	0.39
Queue Length 95th (ft)	2	1	16	44
Control Delay (s)	0.6	0.4	17.2	29.5
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	17.2	29.5
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	288	2	4	0	339	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	324	2	4	0	381	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381			326			356	737	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			326			356	737	325	406	357	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	89	95	100	100	100
cM capacity (veh/h)	1151			596			591	340	716	481	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	381	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	381	33
cSH	1151	1700	596	1700	453
Volume to Capacity	0.01	0.19	0.01	0.22	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.2	0.0	11.1	0.0	14.4
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.1		14.4
Approach LOS					B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/12/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	39	0	2	0	0	0	31	50	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	0	2	0	0	0	36	59	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		112	94	0	170	93	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		112	94	0	170	93	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	95	100	95	100
cM capacity (veh/h)	1554			1620		809	767	1076	711	777	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	48	0	95	40
Volume Left	46	0	0	2
Volume Right	2	0	59	0
cSH	1554	1700	932	773
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	382	4	15	500	31	10	7	24	32	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1666			1767			1759	1538		1747	
Flt Permitted		0.98			0.99			0.81	1.00		0.80	
Satd. Flow (perm)		1643			1747			1461	1538		1446	
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)	12	411	4	16	538	33	11	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	22	0	12	0
Lane Group Flow (vph)	0	427	0	0	586	0	0	19	4	0	44	0
Heavy Vehicles (%)	7%	14%	7%	2%	7%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		26.2			26.2			5.7	5.7		5.7	
Effective Green, g (s)		26.7			26.7			6.2	6.2		6.2	
Actuated g/C Ratio		0.65			0.65			0.15	0.15		0.15	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1073			1140			221	233		219	
v/s Ratio Prot												
v/s Ratio Perm		0.26			c0.34			0.01	0.00		c0.03	
v/c Ratio		0.40			0.51			0.09	0.02		0.20	
Uniform Delay, d1		3.3			3.7			14.9	14.8		15.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.4			0.2	0.0		0.5	
Delay (s)		3.6			4.1			15.1	14.8		15.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.6			4.1			14.9			15.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	40.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	52	262	19	53
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	203	17	59	298	22	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			220		619	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					416	
vCu, unblocked vol			220		619	203
tC, single (s)			5.0		6.5	7.1
tC, 2 stage (s)					5.5	
tF (s)			3.0		3.6	4.1
p0 queue free %			94		96	91
cM capacity (veh/h)			955		560	656

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	59	298	82
Volume Left	0	0	59	0	22
Volume Right	0	17	0	0	60
cSH	1700	1700	955	1700	627
Volume to Capacity	0.12	0.01	0.06	0.18	0.13
Queue Length 95th (ft)	0	0	5	0	11
Control Delay (s)	0.0	0.0	9.0	0.0	11.6
Lane LOS			A		B
Approach Delay (s)	0.0		1.5		11.6
Approach LOS					B

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	1257	11	0	0	0	0	55	24	16	81	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3285						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3285						3240			3066	
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)	128	1352	12	0	0	0	0	59	26	17	87	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1492	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2576						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.45									c0.03	
v/c Ratio		0.58						0.19			0.33	
Uniform Delay, d1		3.0						28.8			29.3	
Progression Factor		1.00						1.00			0.57	
Incremental Delay, d2		1.0						0.3			0.6	
Delay (s)		3.9						29.1			17.4	
Level of Service		A						C			B	
Approach Delay (s)		3.9			0.0			29.1			17.4	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1230	64	0	0	0	0	80	121	77	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3275						1711			1621	
Flt Permitted		1.00						1.00			0.69	
Satd. Flow (perm)		3275						1711			1149	
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)	18	1447	75	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1536	0	0	0	0	0	214	0	0	187	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		33.8						15.1			15.1	
Effective Green, g (s)		33.8						15.1			15.1	
Actuated g/C Ratio		0.59						0.27			0.27	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1945						454			305	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.47									c0.16	
v/c Ratio		0.79						0.47			0.61	
Uniform Delay, d1		8.8						17.5			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.1						0.8			3.6	
Delay (s)		11.0						18.3			22.0	
Level of Service		B						B			C	
Approach Delay (s)		11.0			0.0			18.3			22.0	
Approach LOS		B			A			B			C	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1217	18	0	0	0	0	25	24	25	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3289						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3289						1597			1355	
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)	23	1255	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1296	0	0	0	0	0	29	0	0	55	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		32.0						4.5			4.5	
Effective Green, g (s)		32.5						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2349						175			149	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.39									c0.04	
v/c Ratio		0.55						0.16			0.37	
Uniform Delay, d1		3.1						18.4			18.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.3						0.4			1.5	
Delay (s)		3.3						18.8			20.3	
Level of Service		A						B			C	
Approach Delay (s)		3.3			0.0			18.8			20.3	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	45.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	1241	19	0	0	0	0	31	36	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	48	1279	20	0	0	0	0	32	37	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1299			1409	1386	649	790	1396	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1299			1409	1386	649	790	1396	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	77	91	78	66	100
cM capacity (veh/h)	1607			529			71	136	410	207	138	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	688	659	69	92
Volume Left	48	0	0	45
Volume Right	0	20	37	0
cSH	1607	1700	213	165
Volume to Capacity	0.03	0.39	0.32	0.55
Queue Length 95th (ft)	2	0	34	71
Control Delay (s)	0.8	0.0	29.9	50.9
Lane LOS	A		D	F
Approach Delay (s)	0.4		29.9	50.9
Approach LOS			D	F

Intersection Summary				
Average Delay		4.9		
Intersection Capacity Utilization		54.4%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	909	12	0	0	0	0	415	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3230						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3230						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	988	13	0	0	0	0	451	9	0	0	0
RTOR Reduction (vph)	52	1	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	56	1000	0	0	0	0	0	458	0	0	0	0
Heavy Vehicles (%)	3%	6%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	20.6	20.6						11.4				
Effective Green, g (s)	21.6	21.6						12.4				
Actuated g/C Ratio	0.51	0.51						0.30				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	901	1661						1032				
v/s Ratio Prot		c0.31						c0.13				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.60						0.44				
Uniform Delay, d1	5.1	7.2						12.0				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.6						0.3				
Delay (s)	5.1	7.8						12.3				
Level of Service	A	A						B				
Approach Delay (s)		7.5			0.0			12.3			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1126	70	0	0	0	0	27	171	41	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2840	1300					1575	1504		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.75	
Satd. Flow (perm)		2840	1300					1575	1504		1395	
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)	18	1211	75	0	0	0	0	29	184	44	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	40	40	0	0	0
Lane Group Flow (vph)	0	1229	66	0	0	0	0	68	65	0	78	0
Heavy Vehicles (%)	6%	8%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.1	53.1					7.9	7.9		7.9	
Effective Green, g (s)		53.6	53.6					8.4	8.4		8.4	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2175	995					189	180		167	
v/s Ratio Prot		c0.43						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.57	0.07					0.36	0.36		0.47	
Uniform Delay, d1		3.4	2.0					28.3	28.3		28.7	
Progression Factor		0.31	0.34					1.00	1.00		1.00	
Incremental Delay, d2		1.0	0.1					1.2	1.2		2.1	
Delay (s)		2.0	0.8					29.5	29.5		30.8	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.9			0.0			29.5			30.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1097	24	0	0	0	0	12	86	7	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2832						1314			1462	
Flt Permitted		1.00						1.00			0.87	
Satd. Flow (perm)		2832						1314			1297	
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)	24	1155	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	48	0	0	0	0
Lane Group Flow (vph)	0	1203	0	0	0	0	0	56	0	0	18	0
Heavy Vehicles (%)	6%	8%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.5						7.5			7.5	
Effective Green, g (s)		54.5						7.5			7.5	
Actuated g/C Ratio		0.78						0.11			0.11	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2205						141			139	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.42									0.01	
v/c Ratio		0.55						0.40			0.13	
Uniform Delay, d1		3.0						29.1			28.3	
Progression Factor		0.36						1.00			1.00	
Incremental Delay, d2		0.6						1.8			0.4	
Delay (s)		1.7						31.0			28.7	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			31.0			28.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	956	16	0	0	0	0	0	29	289	216	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2809							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2809							1289	1681	1405	
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)	0	1006	17	0	0	0	0	0	31	304	227	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	175	10	0
Lane Group Flow (vph)	0	1021	0	0	0	0	0	0	4	86	260	0
Heavy Vehicles (%)	2%	9%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		29.1							9.5	17.9	17.9	
Effective Green, g (s)		29.6							10.0	18.4	18.4	
Actuated g/C Ratio		0.42							0.14	0.26	0.26	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1188							184	442	369	
v/s Ratio Prot		c0.36							c0.00	0.05	c0.19	
v/s Ratio Perm												
v/c Ratio		0.86							0.02	0.20	0.71	
Uniform Delay, d1		18.3							25.8	20.0	23.3	
Progression Factor		1.10							1.00	1.00	1.00	
Incremental Delay, d2		7.5							0.2	1.0	10.8	
Delay (s)		27.6							26.0	21.0	34.2	
Level of Service		C							C	C	C	
Approach Delay (s)		27.6			0.0			26.0			27.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	433	12	0	0	0	0	45	25	460	47	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2733						1418		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2733						1418		1681	1360	
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)	7	461	13	0	0	0	0	48	27	489	50	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	479	0	0	0	0	0	51	0	269	270	0
Heavy Vehicles (%)	6%	12%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		19.9						6.9		29.7	29.7	
Effective Green, g (s)		20.4						7.4		30.2	30.2	
Actuated g/C Ratio		0.29						0.11		0.43	0.43	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		796						150		725	587	
v/s Ratio Prot								c0.04		0.16	c0.20	
v/s Ratio Perm		0.18										
v/c Ratio		0.60						0.34		0.37	0.46	
Uniform Delay, d1		21.3						29.0		13.5	14.1	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.3						1.3		1.5	2.6	
Delay (s)		22.6						30.4		14.9	16.7	
Level of Service		C						C		B	B	
Approach Delay (s)		22.6			0.0			30.4			15.8	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	359	0	567	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1678		2031		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1678		2031		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	399	0	630	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	399	0	630	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	11%	2%	6%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		30.5		30.5		
Effective Green, g (s)		30.5		30.5		
Actuated g/C Ratio		0.75		0.75		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1264		1530		
v/s Ratio Prot		0.24		c0.31		
v/s Ratio Perm						
v/c Ratio		0.32		0.41		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.2		
Delay (s)		1.8		2.0		
Level of Service		A		A		
Approach Delay (s)	1.8			2.0	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	40.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	944	22	18	163	0	0	90	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3395			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3395			3044			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	983	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	68	0
Lane Group Flow (vph)	0	0	0	0	1019	0	0	189	0	0	279	0
Heavy Vehicles (%)	2%	2%	2%	3%	6%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					48.8			12.2			12.2	
Effective Green, g (s)					49.3			12.7			12.7	
Actuated g/C Ratio					0.70			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2391			552			543	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.30			0.06				
v/c Ratio					0.43			0.34			0.51	
Uniform Delay, d1					4.4			25.0			25.9	
Progression Factor					1.13			1.03			1.00	
Incremental Delay, d2					0.5			0.3			0.8	
Delay (s)					5.4			26.2			26.7	
Level of Service					A			C			C	
Approach Delay (s)		0.0			5.4			26.2			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1246	19	13	381	0	0	51	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
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3290			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3290			1679			1710	1615
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)	0	0	0	15	1326	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	44
Lane Group Flow (vph)	0	0	0	0	1359	0	0	419	0	0	54	246
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2021			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.41			c0.25				0.15
v/c Ratio					0.67			0.92			0.12	0.56
Uniform Delay, d1					8.9			24.8			19.2	21.9
Progression Factor					0.69			1.00			1.00	1.00
Incremental Delay, d2					1.7			26.1			0.5	5.1
Delay (s)					7.9			50.8			19.7	27.0
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.9			50.8			25.9	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1170	92	32	68	0	0	211	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3500	1554		1815			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3500	1554		1550			1794	
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)	0	0	0	46	1232	97	34	72	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1278	55	0	106	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	3%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					30.6	30.6		15.0			15.0	
Effective Green, g (s)					30.6	30.6		15.0			15.0	
Actuated g/C Ratio					0.57	0.57		0.28			0.28	
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)					1998	887		434			502	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.37	0.04		0.07				
v/c Ratio					0.64	0.06		0.24			0.60	
Uniform Delay, d1					7.8	5.1		14.9			16.7	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.7	0.0		0.3			1.9	
Delay (s)					8.5	5.1		15.2			18.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.2			15.2			18.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1330	5	18	7	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.96			1.00	
Satd. Flow (prot)					3262			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3262			1676			1777	
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)	0	0	0	35	1415	5	19	7	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1455	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	5%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.9			1.3			1.3	
Effective Green, g (s)					30.4			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2467			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.45			c0.02				
v/c Ratio					0.59			0.35			0.29	
Uniform Delay, d1					2.2			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.4			2.8			2.0	
Delay (s)					2.5			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.5			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	42	1221	12	52	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	46	1342	13	57	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1355			0			785	1447	0	1448	1441	677
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1355			0			785	1447	0	1448	1441	677
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			76	89	100	100	85	97
cM capacity (veh/h)	504			1622			237	127	1084	84	130	400

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	717	684	71	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	202	175
Volume to Capacity	0.03	0.40	0.35	0.18
Queue Length 95th (ft)	2	0	38	16
Control Delay (s)	0.8	0.0	32.3	30.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		32.3	30.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1209	2	471	23	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3297		1618	1630				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3297		1618	1630				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1358	2	529	26	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	156	156	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1360	0	119	124	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.3		10.1	10.1				0.7
Effective Green, g (s)					29.3		11.1	11.1				1.7
Actuated g/C Ratio					0.54		0.21	0.21				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1786		332	334				51
v/s Ratio Prot					c0.41							
v/s Ratio Perm							0.07	0.08				c0.00
v/c Ratio					0.76		0.36	0.37				0.00
Uniform Delay, d1					9.7		18.4	18.5				25.4
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					2.0		0.7	0.7				0.0
Delay (s)					11.6		19.1	19.2				25.4
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.6			19.2			25.4	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations			↑↑	↱		↱
Volume (veh/h)	0	0	1272	184	0	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1339	194	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1339				1339	669
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1339				1339	669
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	77
cM capacity (veh/h)	511				142	395

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	669	669	194	89
Volume Left	0	0	0	0
Volume Right	0	0	194	89
cSH	1700	1700	1700	395
Volume to Capacity	0.39	0.39	0.11	0.23
Queue Length 95th (ft)	0	0	0	21
Control Delay (s)	0.0	0.0	0.0	16.8
Lane LOS				C
Approach Delay (s)	0.0			16.8
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	474	1116	0	0	8	98	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	489	1151	0	0	8	101	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			489	489	489	1639	1639	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			489	489	489	1639	1639	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	0	100	
cM capacity (veh/h)			480	579	490	100	395	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	872	767	8	101
Volume Left	0	0	8	0
Volume Right	384	767	0	0
cSH	1700	1700	490	100
Volume to Capacity	0.51	0.45	0.02	1.01
Queue Length 95th (ft)	0	0	1	155
Control Delay (s)	0.0	0.0	12.5	170.1
Lane LOS			B	F
Approach Delay (s)	0.0		158.2	
Approach LOS			F	

Intersection Summary			
Average Delay	9.9		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	52	0	0	1236	0	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3438		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3438		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	0	0	1343	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	0	0	1343	0	508
Heavy Vehicles (%)	2%	2%	3%	5%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.4			48.1		70.5
Effective Green, g (s)	13.9			48.6		70.5
Actuated g/C Ratio	0.20			0.69		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	349			2370		2787
v/s Ratio Prot	0.03			c0.39		
v/s Ratio Perm						c0.18
v/c Ratio	0.16			0.57		0.18
Uniform Delay, d1	23.5			5.6		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	23.6			6.5		0.1
Level of Service	C			A		A
Approach Delay (s)	23.6			6.5	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	4.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	659	577	467	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1631	1845	3467	
Flt Permitted			0.38	1.00	1.00	
Satd. Flow (perm)			658	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	686	601	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	686	601	518	0
Heavy Vehicles (%)	2%	2%	7%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			51.2	55.7	25.0	
Effective Green, g (s)			52.2	56.2	25.5	
Actuated g/C Ratio			0.74	0.80	0.36	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			856	1471	1254	
v/s Ratio Prot			c0.30	0.33	0.15	
v/s Ratio Perm			c0.29			
v/c Ratio			0.80	0.41	0.41	
Uniform Delay, d1			5.5	2.2	16.9	
Progression Factor			0.63	0.08	1.00	
Incremental Delay, d2			4.5	0.7	0.1	
Delay (s)			7.9	0.8	17.0	
Level of Service			A	A	B	
Approach Delay (s)	0.0			4.6	17.0	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	18.3
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	966	222	0	0	0	22	0	566	152	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.97				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2704				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2704				
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)	1039	239	0	0	0	24	0	609	163	0	0	0
RTOR Reduction (vph)	344	88	0	0	0	23	0	25	0	0	0	0
Lane Group Flow (vph)	290	556	0	0	0	1	0	747	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	8%	17%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	25.7	25.7				2.5		29.8				
Effective Green, g (s)	26.2	26.2				1.5		30.3				
Actuated g/C Ratio	0.37	0.37				0.02		0.43				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	606	622				27		1170				
v/s Ratio Prot								c0.28				
v/s Ratio Perm	0.18	0.33				c0.00						
v/c Ratio	0.48	0.89				0.02		0.64				
Uniform Delay, d1	16.7	20.6				33.5		15.6				
Progression Factor	1.33	0.37				1.00		1.00				
Incremental Delay, d2	1.7	12.4				0.1		1.2				
Delay (s)	23.9	20.0				33.6		16.7				
Level of Service	C	C				C		B				
Approach Delay (s)		21.9			33.6			16.7			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	22	0	0	169	18	53	1508	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1644			4933				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1271			1644			4933				
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)	17	23	0	0	178	19	56	1587	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	40	0	0	191	0	0	1649	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	15%	5%	3%	5%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		13.6			13.6			47.4				
Effective Green, g (s)		14.1			14.1			47.9				
Actuated g/C Ratio		0.20			0.20			0.68				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		256			331			3376				
v/s Ratio Prot					c0.12							
v/s Ratio Perm		0.03						0.33				
v/c Ratio		0.16			0.58			0.49				
Uniform Delay, d1		23.0			25.3			5.2				
Progression Factor		1.06			1.00			0.91				
Incremental Delay, d2		0.3			2.4			0.4				
Delay (s)		24.7			27.7			5.1				
Level of Service		C			C			A				
Approach Delay (s)		24.7			27.7			5.1			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	92	147	0	0	91	116	72	1548	105	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1722	1504		4522				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1236			1722	1504		4522				
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)	97	155	0	0	96	122	76	1629	111	0	0	0
RTOR Reduction (vph)	0	0	0	0	12	19	0	9	0	0	0	0
Lane Group Flow (vph)	0	252	0	0	105	82	0	1807	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	6%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.5			17.5	17.5		44.0				
Effective Green, g (s)		18.0			18.0	18.0		44.0				
Actuated g/C Ratio		0.26			0.26	0.26		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		318			443	387		2842				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.40				
v/c Ratio		0.79			0.24	0.21		0.64				
Uniform Delay, d1		24.3			20.6	20.4		8.0				
Progression Factor		0.95			1.00	1.00		2.12				
Incremental Delay, d2		12.0			0.3	0.3		1.0				
Delay (s)		35.0			20.8	20.7		18.1				
Level of Service		C			C	C		B				
Approach Delay (s)		35.0			20.8			18.1			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
307: S "K" Street & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	78	31	0	0	73	32	28	1543	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1786			4382				
Flt Permitted		0.70			1.00			1.00				
Satd. Flow (perm)		1310			1786			4382				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	90	36	0	0	84	37	32	1774	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	126	0	0	106	0	0	1855	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.7			11.7			49.8				
Effective Green, g (s)		12.2			12.2			49.8				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		228			311			3117				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.10						0.42				
v/c Ratio		0.55			0.34			0.60				
Uniform Delay, d1		26.4			25.4			5.1				
Progression Factor		1.61			1.00			0.25				
Incremental Delay, d2		2.8			0.7			0.7				
Delay (s)		45.3			26.0			1.9				
Level of Service		D			C			A				
Approach Delay (s)		45.3			26.0			1.9			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	238	26	0	0	32	18	62	1714	22	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4391				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1057			1418			4391				
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)	253	28	0	0	34	19	66	1823	23	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	281	0	0	44	0	0	1910	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.7			20.7			39.3				
Effective Green, g (s)		21.2			21.2			40.8				
Actuated g/C Ratio		0.30			0.30			0.58				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		320			429			2559				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.27						0.44				
v/c Ratio		0.88			0.10			0.75				
Uniform Delay, d1		23.2			17.6			10.8				
Progression Factor		0.68			1.00			0.62				
Incremental Delay, d2		22.3			0.1			1.7				
Delay (s)		38.0			17.7			8.4				
Level of Service		D			B			A				
Approach Delay (s)		38.0			17.7			8.4			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	54	15	0	0	8	10	23	1685	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.93			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1380			4395				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1132			1380			4395				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	61	17	0	0	9	11	26	1915	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	78	0	0	10	0	0	1958	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		150			183			3309				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.45				
v/c Ratio		0.52			0.06			0.59				
Uniform Delay, d1		28.3			26.5			3.9				
Progression Factor		0.82			1.00			0.25				
Incremental Delay, d2		3.1			0.1			0.5				
Delay (s)		26.3			26.7			1.5				
Level of Service		C			C			A				
Approach Delay (s)		26.3			26.7			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	57	38	35	36	0	0	0	0	17	1391	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4426	
Flt Permitted		1.00			0.79						1.00	
Satd. Flow (perm)		1410			1184						4426	
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)	0	63	42	39	40	0	0	0	0	19	1546	41
RTOR Reduction (vph)	0	28	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	77	0	0	79	0	0	0	0	0	1604	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.9	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		183			154						3345	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.07						0.36	
v/c Ratio		0.42			0.51						0.48	
Uniform Delay, d1		28.0			28.4						3.3	
Progression Factor		1.00			0.96						0.68	
Incremental Delay, d2		1.6			2.8						0.5	
Delay (s)		29.6			30.1						2.7	
Level of Service		C			C						A	
Approach Delay (s)		29.6			30.1			0.0			2.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	148	44	25	76	0	0	0	0	9	1247	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1444			1472						4405	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1444			1329						4405	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	161	48	27	83	0	0	0	0	10	1355	86
RTOR Reduction (vph)	0	18	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	191	0	0	110	0	0	0	0	0	1444	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		14.4			14.4						45.6	
Effective Green, g (s)		14.9			14.9						47.1	
Actuated g/C Ratio		0.21			0.21						0.67	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		307			283						2964	
v/s Ratio Prot		c0.13										
v/s Ratio Perm					0.08						0.33	
v/c Ratio		0.62			0.39						0.49	
Uniform Delay, d1		25.0			23.6						5.6	
Progression Factor		1.00			0.94						0.27	
Incremental Delay, d2		3.9			0.8						0.5	
Delay (s)		28.9			23.0						2.0	
Level of Service		C			C						A	
Approach Delay (s)		28.9			23.0			0.0			2.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	77	21	16	45	0	0	0	0	19	1270	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1447			1471						4430	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1447			1340						4430	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	84	23	17	49	0	0	0	0	21	1380	28
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	90	0	0	66	0	0	0	0	0	1427	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.9	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		188			174						3348	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.32	
v/c Ratio		0.48			0.38						0.43	
Uniform Delay, d1		28.2			27.9						3.1	
Progression Factor		1.00			0.51						0.23	
Incremental Delay, d2		1.9			1.3						0.4	
Delay (s)		30.1			15.7						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.1			15.7			0.0			1.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	106	23	66	93	0	0	0	0	133	1131	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						0.99	
Satd. Flow (prot)		1822			1825						4570	
Flt Permitted		1.00			0.83						0.99	
Satd. Flow (perm)		1822			1553						4570	
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)	0	112	24	69	98	0	0	0	0	140	1191	33
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	125	0	0	167	0	0	0	0	0	1360	0
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		534			455						2709	
v/s Ratio Prot		0.07										
v/s Ratio Perm					c0.11						0.30	
v/c Ratio		0.23			0.37						0.50	
Uniform Delay, d1		18.8			19.6						8.3	
Progression Factor		1.00			0.97						0.83	
Incremental Delay, d2		1.0			2.1						0.6	
Delay (s)		19.8			21.2						7.5	
Level of Service		B			C						A	
Approach Delay (s)		19.8			21.2			0.0			7.5	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	36	173	0	0	0	0	22	430	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.93	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1347						2531	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1347						2531	1400
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)	0	0	0	38	184	0	0	0	0	23	457	830
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	144	152
Lane Group Flow (vph)	0	0	0	0	222	0	0	0	0	0	751	263
Heavy Vehicles (%)	2%	2%	2%	50%	4%	2%	2%	2%	2%	0%	11%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					17.1						43.9	43.9
Effective Green, g (s)					17.6						44.4	44.4
Actuated g/C Ratio					0.25						0.63	0.63
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					339						1605	888
v/s Ratio Prot												
v/s Ratio Perm					0.16						0.30	0.19
v/c Ratio					0.65						0.47	0.30
Uniform Delay, d1					23.5						6.7	5.8
Progression Factor					0.83						0.52	0.19
Incremental Delay, d2					4.3						0.9	0.8
Delay (s)					23.9						4.3	1.9
Level of Service					C						A	A
Approach Delay (s)		0.0			23.9			0.0			3.6	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1131	31	0	0	0	0	0	0	19	425	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3109									2655	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3109									2655	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1300	36	0	0	0	0	0	0	22	489	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	1334	0	0	0	0	0	0	0	0	505	0
Heavy Vehicles (%)	0%	4%	7%	2%	2%	2%	2%	2%	2%	0%	16%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		39.1									21.9	
Effective Green, g (s)		39.6									22.4	
Actuated g/C Ratio		0.57									0.32	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1759									850	
v/s Ratio Prot		c0.43										
v/s Ratio Perm											0.19	
v/c Ratio		0.76									0.59	
Uniform Delay, d1		11.6									20.0	
Progression Factor		0.78									1.43	
Incremental Delay, d2		2.7									1.0	
Delay (s)		11.7									29.6	
Level of Service		B									C	
Approach Delay (s)		11.7			0.0			0.0			29.6	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	120	670	0	0	0	0	0	1522	419	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1242			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1242			
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)	126	705	0	0	0	0	0	1602	441	0	0	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	36	0	0	0
Lane Group Flow (vph)	0	821	0	0	0	0	0	1602	405	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	4%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		19.4						42.1	42.1			
Effective Green, g (s)		19.4						42.6	42.6			
Actuated g/C Ratio		0.28						0.61	0.61			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1268						1865	756			
v/s Ratio Prot								c0.52				
v/s Ratio Perm		0.18							0.33			
v/c Ratio		0.65						0.86	0.54			
Uniform Delay, d1		22.3						11.2	8.0			
Progression Factor		0.89						1.81	2.02			
Incremental Delay, d2		1.1						4.6	2.3			
Delay (s)		20.8						25.0	18.4			
Level of Service		C						C	B			
Approach Delay (s)		20.8			0.0			23.6			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	579	419	81	1464	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3258			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3258			2943				
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)	0	0	0	0	597	432	84	1509	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1013	0	0	1587	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					23.7			37.3				
Effective Green, g (s)					24.2			37.8				
Actuated g/C Ratio					0.35			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1126			1589				
v/s Ratio Prot					c0.31							
v/s Ratio Perm								0.54				
v/c Ratio					0.90			1.00				
Uniform Delay, d1					21.7			16.1				
Progression Factor					1.00			0.79				
Incremental Delay, d2					9.7			16.2				
Delay (s)					31.5			29.0				
Level of Service					C			C				
Approach Delay (s)		0.0			31.5			29.0			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	275	46	0	0	0	0	0	0	373	1188	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2944									4394	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2944									4394	
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)	0	296	49	0	0	0	0	0	0	401	1277	0
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	0	0	55	0
Lane Group Flow (vph)	0	322	0	0	0	0	0	0	0	0	1623	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.9									48.1	
Effective Green, g (s)		13.4									48.6	
Actuated g/C Ratio		0.19									0.69	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		564									3051	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.37	
v/c Ratio		0.57									0.53	
Uniform Delay, d1		25.7									5.2	
Progression Factor		1.00									0.63	
Incremental Delay, d2		1.4									0.6	
Delay (s)		27.1									3.9	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			3.9	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	345	305	0	0	0	0	0	1330	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.98						1.00	
Satd. Flow (prot)				1264	3275						4415	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1264	3275						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	375	332	0	0	0	0	0	1446	70
RTOR Reduction (vph)	0	0	0	21	21	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	208	457	0	0	0	0	0	1510	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				17.5	17.5						43.5	
Effective Green, g (s)				18.0	18.0						44.0	
Actuated g/C Ratio				0.26	0.26						0.63	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				325	842						2775	
v/s Ratio Prot				c0.16	0.14						c0.34	
v/s Ratio Perm												
v/c Ratio				0.64	0.54						0.54	
Uniform Delay, d1				23.1	22.4						7.3	
Progression Factor				1.15	1.21						1.00	
Incremental Delay, d2				2.0	0.3						0.8	
Delay (s)				28.6	27.5						8.1	
Level of Service				C	C						A	
Approach Delay (s)		0.0			27.9			0.0			8.1	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
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)	15	1289	37	28	1076	2	356	9	18	17	4	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.96	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3342		1681	1673			1743	
Flt Permitted		0.93		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3088		1727	3342		1681	1673			1743	
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)	18	1516	44	33	1266	2	419	11	21	20	5	11
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	10	0
Lane Group Flow (vph)	0	1577	0	33	1268	0	226	222	0	0	26	0
Heavy Vehicles (%)	2%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	1%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.1		5.4	80.5		17.4	17.4			5.1	
Effective Green, g (s)		72.1		5.4	81.5		18.4	18.4			6.1	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1887		79	2308		262	261			90	
v/s Ratio Prot				0.02	c0.38		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.51										
v/c Ratio		0.84		0.42	0.55		0.86	0.85			0.28	
Uniform Delay, d1		18.2		54.8	9.1		48.6	48.4			53.8	
Progression Factor		1.00		1.03	0.58		1.00	1.00			1.00	
Incremental Delay, d2		4.6		2.8	0.7		24.1	21.8			1.7	
Delay (s)		22.8		59.1	6.1		72.7	70.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		22.8			7.4			71.5			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	1632	104	54	1129	0	220	9	111	52	19	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3313		1727	3343		1665	1553			1750	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3313		1727	3343		1665	1553			1750	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	27	1700	108	56	1176	0	229	9	116	54	20	26
RTOR Reduction (vph)	0	3	0	0	0	0	0	64	0	0	12	0
Lane Group Flow (vph)	27	1805	0	56	1176	0	183	107	0	0	88	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.0		7.7	66.1		14.6	14.6			11.7	
Effective Green, g (s)	6.6	66.0		7.7	67.1		15.6	15.6			12.7	
Actuated g/C Ratio	0.06	0.56		0.07	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1853		113	1901		220	205			188	
v/s Ratio Prot	0.02	c0.54		0.03	c0.35		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.28	0.97		0.50	0.62		0.83	0.52			0.47	
Uniform Delay, d1	53.4	25.2		53.3	16.9		49.9	47.7			49.5	
Progression Factor	0.80	0.63		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	12.8		2.5	1.5		23.2	2.7			2.1	
Delay (s)	43.5	28.7		55.8	18.5		73.1	50.4			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		28.9			20.2			62.1			51.6	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM Average Control Delay	29.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	823	3	533	760	0	319
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.94	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3442		3145	1616		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3442		3145	1616		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1016	4	658	938	0	394
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1020	0	1089	507	0	394
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	29.8		33.1	74.9		33.1
Effective Green, g (s)	31.8		35.1	74.9		35.1
Actuated g/C Ratio	0.42		0.47	1.00		0.47
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1461		1474	1616		1245
v/s Ratio Prot	c0.30		c0.35	0.31		0.15
v/s Ratio Perm						
v/c Ratio	0.70		0.74	0.31		0.32
Uniform Delay, d1	17.6		16.2	0.0		12.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	1.4		1.9	0.5		0.1
Delay (s)	19.0		18.0	0.5		12.5
Level of Service	B		B	A		B
Approach Delay (s)	19.0		12.5		12.5	
Approach LOS	B		B		B	

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	74.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	21	0	0	9	19	647	1	3	346	56
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	22	0	0	9	20	681	1	3	364	59
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1138	1129	401	1116	1158	684	429			683		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1138	1129	401	1116	1158	684	429			683		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	172	200	649	176	192	452	1129			909		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	22	9	13	689	3	423
Volume Left	0	0	13	7	3	0
Volume Right	22	9	0	1	0	59
cSH	649	452	1129	1129	909	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.25
Queue Length 95th (ft)	3	2	1	1	0	0
Control Delay (s)	10.7	13.1	8.2	0.3	9.0	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.1	0.5		0.1	
Approach LOS	B	B				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	25	1	10	0	2	4	14	602	2	2	298	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	27	1	11	0	2	4	15	647	2	2	320	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1023	1020	336	1015	1034	648	352			649		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1023	1020	336	1015	1034	648	352			649		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	100	98	100	99	99	99			100		
cM capacity (veh/h)	209	234	708	211	230	472	1213			937		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	39	6	15	649	2	352
Volume Left	27	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	261	349	1213	1700	937	1700
Volume to Capacity	0.15	0.02	0.01	0.38	0.00	0.21
Queue Length 95th (ft)	13	1	1	0	0	0
Control Delay (s)	21.2	15.5	8.0	0.0	8.9	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	21.2	15.5	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	10	400	2	2	226	168
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	11	460	2	2	260	193
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	851	846	356	752	941	461	453			462		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	851	846	356	752	941	461	453			462		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	92	100	100	100	98	99	99			100		
cM capacity (veh/h)	273	298	692	311	251	582	1118			1110		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	11	462	2	453
Volume Left	22	0	11	0	2	0
Volume Right	3	5	0	2	0	193
cSH	297	336	1118	1700	1110	1700
Volume to Capacity	0.09	0.03	0.01	0.27	0.00	0.27
Queue Length 95th (ft)	7	2	1	0	0	0
Control Delay (s)	18.2	16.1	8.3	0.0	8.3	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	18.2	16.1	0.2		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	36.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	378	37	0	0	0	1	91	1	2	232	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	398	39	0	0	0	1	96	1	2	244	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			437			554	417	417	466	437	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			437			554	417	417	466	437	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	82	100	100	52	99
cM capacity (veh/h)	1604			1134			275	528	638	435	513	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	437	0	98	261
Volume Left	0	0	1	2
Volume Right	39	0	1	15
cSH	1604	1700	524	528
Volume to Capacity	0.00	0.00	0.19	0.49
Queue Length 95th (ft)	0	0	17	68
Control Delay (s)	0.0	0.0	13.4	18.3
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.4	18.3
Approach LOS			B	C

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	613	1	3	626	9	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	659	1	3	673	10	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			660		1339	660
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			660		1339	660
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		93	99
cM capacity (veh/h)			900		133	389

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	660	676	12
Volume Left	0	3	10
Volume Right	1	0	2
cSH	1700	900	151
Volume to Capacity	0.39	0.00	0.08
Queue Length 95th (ft)	0	0	6
Control Delay (s)	0.0	0.1	30.8
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	30.8
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	606	0	2	652	10	0	1	0	9	2	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	659	0	2	709	11	0	1	0	10	2	9
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	721			662			1411	1406	664	1400	1401	716
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	721			662			1411	1406	664	1400	1401	716
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	91	98	98
cM capacity (veh/h)	867			910			111	138	462	113	135	423

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	668	722	1	21
Volume Left	10	2	0	10
Volume Right	0	11	0	9
cSH	867	910	138	167
Volume to Capacity	0.01	0.00	0.01	0.12
Queue Length 95th (ft)	1	0	1	10
Control Delay (s)	0.3	0.1	31.3	29.5
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	31.3	29.5
Approach LOS			D	D

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	609	1	1	647	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	662	1	1	703	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	704			663			1372	1371	662	1372	1371	704
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	704			663			1372	1371	662	1372	1371	704
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	99	100	100
cM capacity (veh/h)	880			912			123	146	462	123	146	437

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	664	705	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	880	912	194	192
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	23.8	24.0
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	23.8	24.0
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	477	80	118	477	11	119	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	52	524	88	130	524	12	131	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	538			612			1497	1469	570	1468	1507	533
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	538			612			1497	1469	570	1468	1507	533
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			87			0	98	100	79	99	94
cM capacity (veh/h)	1013			962			82	105	524	89	99	545

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	664	666	135	54
Volume Left	52	130	131	19
Volume Right	88	12	2	34
cSH	1013	962	83	190
Volume to Capacity	0.05	0.13	1.63	0.28
Queue Length 95th (ft)	4	12	277	28
Control Delay (s)	1.3	3.3	417.1	31.4
Lane LOS	A	A	F	D
Approach Delay (s)	1.3	3.3	417.1	31.4
Approach LOS			F	D

Intersection Summary			
Average Delay	40.3		
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	497	0	0	27	606
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	540	0	0	29	659
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			717	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			717	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			389	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	540	29	659
Volume Left	0	29	0
Volume Right	540	0	0
cSH	1700	1578	1700
Volume to Capacity	0.32	0.02	0.39
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	510	5	0	282	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	560	5	0	310	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1124	1124	1126	0
vC1, stage 1 conf vol			1124	1124	0	
vC2, stage 2 conf vol			0	0	1126	
vCu, unblocked vol	0		1124	1124	1126	0
tC, single (s)	4.2		7.1	6.5	6.5	6.2
tC, 2 stage (s)			6.1	5.5	5.5	
tF (s)	2.3		3.5	4.0	4.0	3.3
p0 queue free %	65		100	0	100	100
cM capacity (veh/h)	1585		146	158	162	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	374	192	310
Volume Left	374	187	0
Volume Right	0	5	0
cSH	1585	1585	158
Volume to Capacity	0.35	0.35	1.97
Queue Length 95th (ft)	41	41	597
Control Delay (s)	8.5	8.4	504.4
Lane LOS	A	A	F
Approach Delay (s)	8.5		504.4
Approach LOS			F

Intersection Summary			
Average Delay	183.9		
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	22	3	0	0	172	8	12	768	21	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	25	3	0	0	195	9	14	873	24	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	570	924	0	914	912	448	0			897		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570	924	0	914	912	448	0			897		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	99	100	100	28	98	99			100		
cM capacity (veh/h)	166	269	1091	226	272	561	1600			753		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	28	205	450	460
Volume Left	25	0	14	0
Volume Right	0	9	0	24
cSH	174	278	1600	1700
Volume to Capacity	0.16	0.74	0.01	0.27
Queue Length 95th (ft)	14	132	1	0
Control Delay (s)	29.7	46.9	0.3	0.0
Lane LOS	D	E	A	
Approach Delay (s)	29.7	46.9	0.1	
Approach LOS	D	E		

Intersection Summary				
Average Delay		9.2		
Intersection Capacity Utilization		45.1%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	8	6	0	0	16	2	5	782	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	8	6	0	0	17	2	5	815	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	428	830	2	833	828	410	0			820		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	428	830	2	833	828	410	0			820		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	95	100	100			100		
cM capacity (veh/h)	491	307	1086	260	308	597	1593			805		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	15	19	412	412
Volume Left	8	0	5	0
Volume Right	0	2	0	5
cSH	391	325	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.24
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	14.6	16.7	0.1	0.0
Lane LOS	B	C	A	
Approach Delay (s)	14.6	16.7	0.1	
Approach LOS	B	C		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	92	9	38	727	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	107	10	44	845	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	578	948	4	946	944	430	3			856		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	578	948	4	946	944	430	3			856		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	95	97	100	100	52	98	97			100		
cM capacity (veh/h)	217	223	1019	181	224	524	1599			777		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	117	467	430
Volume Left	12	0	44	0
Volume Right	0	10	0	7
cSH	219	236	1599	1700
Volume to Capacity	0.09	0.50	0.03	0.25
Queue Length 95th (ft)	7	63	2	0
Control Delay (s)	23.0	34.5	0.9	0.0
Lane LOS	C	D	A	
Approach Delay (s)	23.0	34.5	0.5	
Approach LOS	C	D		

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
359: N Washington Street & W Wishkah Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	11	86	42	0	0	0	0	3	441	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	13	102	50	0	0	0	0	4	525	11
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.90	0.90	0.90	0.90	0.90		0.90					
vC, conflicting volume	566	548	271	297	553	7	539			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	280	260	0	0	266	7	250			7		
tC, single (s)	7.8	6.8	7.0	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.3	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	99	88	91	100	100			100		
cM capacity (veh/h)	510	544	963	864	564	1055	1172			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	27	152	266	273
Volume Left	0	102	4	0
Volume Right	13	0	0	11
cSH	687	735	1541	1700
Volume to Capacity	0.04	0.21	0.00	0.16
Queue Length 95th (ft)	3	19	0	0
Control Delay (s)	10.5	11.2	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	10.5	11.2	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.8		
Intersection Capacity Utilization		34.9%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	510	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	548	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	585	577	283	307	584	4	561			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	585	577	283	307	584	4	561			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	386	427	720	607	423	1080	1006			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	285	287
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	453	516	1576	1700
Volume to Capacity	0.03	0.06	0.01	0.17
Queue Length 95th (ft)	3	4	1	0
Control Delay (s)	13.2	12.4	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.2	12.4	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.1		
Intersection Capacity Utilization		33.4%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	464	66	0	30	1	123	42	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	494	70	0	32	1	131	45	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	564			0			579	556	284	293	591	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	564			0			579	556	284	293	591	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	93	100	78	89	100
cM capacity (veh/h)	1004			1565			367	438	719	598	416	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	261	317	33	176
Volume Left	14	0	0	131
Volume Right	0	70	1	0
cSH	1565	1700	444	538
Volume to Capacity	0.01	0.19	0.07	0.33
Queue Length 95th (ft)	1	0	6	35
Control Delay (s)	0.5	0.0	13.8	14.9
Lane LOS	A		B	B
Approach Delay (s)	0.2		13.8	14.9
Approach LOS			B	B

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
362: S Division Street & W Heron Street

8/19/2009

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	153	113	266	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	166	123	289	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	215			29			153	161	132	297	236	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	215			29			153	161	132	297	236	21
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	100			100			85	61	100	99	100	100
cM capacity (veh/h)	1355			1584			819	733	923	445	654	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	215	412	5
Volume Left	0	0	123	5
Volume Right	17	166	0	0
cSH	1355	1584	756	445
Volume to Capacity	0.00	0.00	0.54	0.01
Queue Length 95th (ft)	0	0	83	1
Control Delay (s)	0.0	0.0	15.3	13.2
Lane LOS			C	B
Approach Delay (s)	0.0	0.0	15.3	13.2
Approach LOS			C	B

Intersection Summary			
Average Delay	9.6		
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	123	197	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	134	214	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	351	215	215			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	351	215	215			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	646	825	1367			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	135	215
Volume Left	1	1	0
Volume Right	1	0	1
cSH	725	1367	1700
Volume to Capacity	0.00	0.00	0.13
Queue Length 95th (ft)	0	0	0
Control Delay (s)	10.0	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	10.0	0.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	20.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
371: Port Industrial Road & W 1st Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	35	445	4	4	559	6	16	3	5	5	0	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	40	511	5	5	643	7	18	3	6	6	0	49
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	643			516			1295	1246	514	1255	1252	646
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	643			516			1295	1246	514	1255	1252	646
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			84	98	99	96	100	89
cM capacity (veh/h)	901			1060			114	159	543	133	157	456

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	40	516	5	649	28	55
Volume Left	40	0	5	0	18	6
Volume Right	0	5	0	7	6	49
cSH	901	1700	1060	1700	143	364
Volume to Capacity	0.04	0.30	0.00	0.38	0.19	0.15
Queue Length 95th (ft)	4	0	0	0	17	13
Control Delay (s)	9.2	0.0	8.4	0.0	36.1	16.6
Lane LOS	A		A		E	C
Approach Delay (s)	0.7		0.1		36.1	16.6
Approach LOS					E	C

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	377	10	15	490	119	9	14	39	61	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	410	11	16	533	129	10	15	42	66	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			421			1115	1147	415	1132	1088	597
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			421			1115	1147	415	1132	1088	597
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			94	92	93	57	97	94
cM capacity (veh/h)	890			1097			157	182	612	154	209	505

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	439	678	67	102
Volume Left	18	16	10	66
Volume Right	11	129	42	29
cSH	890	1097	314	196
Volume to Capacity	0.02	0.01	0.21	0.52
Queue Length 95th (ft)	2	1	20	67
Control Delay (s)	0.6	0.4	19.6	41.8
Lane LOS	A	A	C	E
Approach Delay (s)	0.6	0.4	19.6	41.8
Approach LOS			C	E

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	331	2	4	0	381	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	372	2	4	0	428	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	428			374			404	833	373	454	406	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	428			374			404	833	373	454	406	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	88	95	100	100	100
cM capacity (veh/h)	1105			560			549	299	673	440	525	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	374	4	428	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	428	33
cSH	1105	1700	560	1700	406
Volume to Capacity	0.01	0.22	0.01	0.25	0.17
Queue Length 95th (ft)	1	0	1	0	15
Control Delay (s)	8.3	0.0	11.5	0.0	15.6
Lane LOS	A		B		C
Approach Delay (s)	0.2		0.1		15.6
Approach LOS					C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/19/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	40	0	2	0	0	0	31	51	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	47	0	2	0	0	0	36	60	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		114	96	0	174	95	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		114	96	0	174	95	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	94	100	95	100
cM capacity (veh/h)	1554			1620		805	764	1076	706	774	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	49	0	96	40
Volume Left	47	0	0	2
Volume Right	2	0	60	0
cSH	1554	1700	932	770
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	351	4	15	469	31	10	8	25	32	8	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1771			1845			1761	1538		1749	
Flt Permitted		0.98			0.99			0.81	1.00		0.81	
Satd. Flow (perm)		1744			1824			1472	1538		1451	
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)	12	377	4	16	504	33	11	9	27	34	9	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	393	0	0	551	0	0	20	4	0	45	0
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		24.1			24.1			5.6	5.6		5.6	
Effective Green, g (s)		24.6			24.6			6.1	6.1		6.1	
Actuated g/C Ratio		0.64			0.64			0.16	0.16		0.16	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1109			1159			232	242		229	
v/s Ratio Prot												
v/s Ratio Perm		0.23			c0.30			0.01	0.00		c0.03	
v/c Ratio		0.35			0.48			0.09	0.02		0.20	
Uniform Delay, d1		3.3			3.7			13.9	13.8		14.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.2	0.0		0.4	
Delay (s)		3.5			4.0			14.1	13.8		14.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.5			4.0			13.9			14.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	38.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	195	15	2	278	19	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	222	17	2	316	22	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			239		542	222
vC1, stage 1 conf vol					222	
vC2, stage 2 conf vol					320	
vCu, unblocked vol			239		542	222
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		97	100
cM capacity (veh/h)			1334		638	789

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	222	17	2	316	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1334	1700	655
Volume to Capacity	0.13	0.01	0.00	0.19	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.7
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.7
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	24.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	121	1239	11	0	0	0	0	56	25	16	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3343						3237			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3343						3237			3066	
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)	130	1332	12	0	0	0	0	60	27	17	88	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	1474	0	0	0	0	0	63	0	0	105	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2622						328			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.44									c0.03	
v/c Ratio		0.56						0.19			0.34	
Uniform Delay, d1		2.9						28.8			29.3	
Progression Factor		1.00						1.00			0.58	
Incremental Delay, d2		0.9						0.3			0.6	
Delay (s)		3.8						29.1			17.5	
Level of Service		A						C			B	
Approach Delay (s)		3.8			0.0			29.1			17.5	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1204	65	0	0	0	0	81	123	79	83	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3335						1711			1621	
Flt Permitted		1.00						1.00			0.71	
Satd. Flow (perm)		3335						1711			1173	
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)	18	1416	76	0	0	0	0	95	145	93	98	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1506	0	0	0	0	0	217	0	0	191	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.8						15.3			15.3	
Effective Green, g (s)		31.8						15.3			15.3	
Actuated g/C Ratio		0.58						0.28			0.28	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1925						475			326	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.45									c0.16	
v/c Ratio		0.78						0.46			0.59	
Uniform Delay, d1		9.0						16.5			17.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.1						0.7			2.7	
Delay (s)		11.0						17.2			19.8	
Level of Service		B						B			B	
Approach Delay (s)		11.0			0.0			17.2			19.8	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1191	18	0	0	0	0	26	25	26	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3352						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3352						1597			1348	
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)	24	1228	19	0	0	0	0	27	26	27	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1270	0	0	0	0	0	30	0	0	56	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		31.0						4.5			4.5	
Effective Green, g (s)		31.5						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2373						179			151	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.38									c0.04	
v/c Ratio		0.54						0.17			0.37	
Uniform Delay, d1		3.1						17.9			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.4			1.5	
Delay (s)		3.3						18.3			19.8	
Level of Service		A						B			B	
Approach Delay (s)		3.3			0.0			18.3			19.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	44.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	48	1214	19	0	0	0	0	31	37	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	49	1252	20	0	0	0	0	32	38	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1271			1384	1360	636	779	1370	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1271			1384	1360	636	779	1370	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	77	91	79	68	100
cM capacity (veh/h)	1607			542			75	141	418	212	143	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	675	645	70	92
Volume Left	49	0	0	45
Volume Right	0	20	38	0
cSH	1607	1700	221	171
Volume to Capacity	0.03	0.38	0.32	0.54
Queue Length 95th (ft)	2	0	33	68
Control Delay (s)	0.9	0.0	28.7	48.3
Lane LOS	A		D	E
Approach Delay (s)	0.4		28.7	48.3
Approach LOS			D	E

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	876	12	0	0	0	0	458	9	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3323						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	952	13	0	0	0	0	498	10	0	0	0
RTOR Reduction (vph)	55	2	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	55	964	0	0	0	0	0	506	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	20.0	20.0						12.0				
Effective Green, g (s)	21.0	21.0						13.0				
Actuated g/C Ratio	0.50	0.50						0.31				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	876	1662						1081				
v/s Ratio Prot		c0.29						c0.14				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.58						0.47				
Uniform Delay, d1	5.4	7.4						11.7				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.5						0.3				
Delay (s)	5.5	7.9						12.0				
Level of Service	A	A						B				
Approach Delay (s)		7.6			0.0			12.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1133	71	0	0	0	0	27	174	42	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1575	1504		1811	
Flt Permitted		1.00	1.00					1.00	1.00		0.74	
Satd. Flow (perm)		2893	1300					1575	1504		1383	
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)	18	1218	76	0	0	0	0	29	187	45	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	40	40	0	0	0
Lane Group Flow (vph)	0	1236	67	0	0	0	0	69	67	0	79	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.1	53.1					7.9	7.9		7.9	
Effective Green, g (s)		53.6	53.6					8.4	8.4		8.4	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2215	995					189	180		166	
v/s Ratio Prot		c0.43						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.56	0.07					0.37	0.37		0.48	
Uniform Delay, d1		3.4	2.0					28.4	28.4		28.7	
Progression Factor		0.28	0.28					1.00	1.00		1.00	
Incremental Delay, d2		0.9	0.1					1.2	1.3		2.1	
Delay (s)		1.8	0.7					29.6	29.7		30.9	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.8			0.0			29.6			30.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	24	1103	25	0	0	0	0	12	88	8	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2883						1314			1459	
Flt Permitted		1.00						1.00			0.86	
Satd. Flow (perm)		2883						1314			1282	
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)	25	1161	26	0	0	0	0	13	93	8	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	47	0	0	0	0
Lane Group Flow (vph)	0	1211	0	0	0	0	0	59	0	0	19	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.3						7.7			7.7	
Effective Green, g (s)		54.3						7.7			7.7	
Actuated g/C Ratio		0.78						0.11			0.11	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2236						145			141	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.42									0.01	
v/c Ratio		0.54						0.41			0.13	
Uniform Delay, d1		3.0						29.0			28.1	
Progression Factor		0.37						1.00			1.00	
Incremental Delay, d2		0.6						1.9			0.4	
Delay (s)		1.7						30.9			28.6	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			30.9			28.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	947	16	0	0	0	0	0	37	299	227	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2888							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2888							1289	1681	1405	
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)	0	997	17	0	0	0	0	0	39	315	239	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	33	164	10	0
Lane Group Flow (vph)	0	1012	0	0	0	0	0	0	6	107	273	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		28.9							9.5	18.1	18.1	
Effective Green, g (s)		29.4							10.0	18.6	18.6	
Actuated g/C Ratio		0.42							0.14	0.27	0.27	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1213							184	447	373	
v/s Ratio Prot		c0.35							c0.00	0.06	c0.19	
v/s Ratio Perm												
v/c Ratio		0.83							0.03	0.24	0.73	
Uniform Delay, d1		18.1							25.8	20.1	23.4	
Progression Factor		1.11							1.00	1.00	1.00	
Incremental Delay, d2		6.3							0.3	1.3	12.0	
Delay (s)		26.4							26.1	21.4	35.5	
Level of Service		C							C	C	D	
Approach Delay (s)		26.4			0.0			26.1			28.6	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	8	403	12	0	0	0	0	45	26	480	48	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2879						1416		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2879						1416		1681	1360	
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)	9	429	13	0	0	0	0	48	28	511	51	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	448	0	0	0	0	0	51	0	281	281	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		18.4						6.8		31.3	31.3	
Effective Green, g (s)		18.9						7.3		31.8	31.8	
Actuated g/C Ratio		0.27						0.10		0.45	0.45	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		777						148		764	618	
v/s Ratio Prot								c0.04		0.17	c0.21	
v/s Ratio Perm		0.16										
v/c Ratio		0.58						0.34		0.37	0.45	
Uniform Delay, d1		22.1						29.1		12.5	13.1	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.0						1.4		1.4	2.4	
Delay (s)		23.1						30.5		13.9	15.5	
Level of Service		C						C		B	B	
Approach Delay (s)		23.1			0.0			30.5			14.7	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	327	0	538	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1791		2111		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1791		2111		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	363	0	598	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	363	0	598	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		29.6		29.6		
Effective Green, g (s)		29.6		29.6		
Actuated g/C Ratio		0.75		0.75		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1335		1574		
v/s Ratio Prot		0.20		c0.28		
v/s Ratio Perm						
v/c Ratio		0.27		0.38		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.2		
Delay (s)		1.7		1.9		
Level of Service		A		A		
Approach Delay (s)	1.7			1.9	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	39.7	Sum of lost time (s)	10.1
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	919	23	18	167	0	0	92	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					3490			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3490			3044			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	957	24	19	174	0	0	96	258
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	73	0
Lane Group Flow (vph)	0	0	0	0	994	0	0	193	0	0	281	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					48.8			12.2			12.2	
Effective Green, g (s)					49.3			12.7			12.7	
Actuated g/C Ratio					0.70			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2458			552			543	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.28			0.06				
v/c Ratio					0.40			0.35			0.52	
Uniform Delay, d1					4.3			25.0			25.9	
Progression Factor					1.37			1.04			1.00	
Incremental Delay, d2					0.5			0.4			0.8	
Delay (s)					6.3			26.3			26.7	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.3			26.3			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1227	19	13	389	0	0	52	278
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	4.0
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3353			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3353			1679			1710	1615
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)	0	0	0	15	1305	20	14	414	0	0	55	296
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	47
Lane Group Flow (vph)	0	0	0	0	1338	0	0	428	0	0	55	249
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2060			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.40			c0.25				0.15
v/c Ratio					0.65			0.94			0.12	0.57
Uniform Delay, d1					8.7			24.9			19.2	22.0
Progression Factor					0.62			1.00			1.00	1.00
Incremental Delay, d2					1.5			29.3			0.5	5.3
Delay (s)					6.9			54.2			19.7	27.3
Level of Service					A			D			B	C
Approach Delay (s)		0.0			6.9			54.2			26.1	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1142	94	32	69	0	0	215	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3567	1554		1815			1795	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3567	1554		1552			1795	
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)	0	0	0	46	1202	99	34	73	0	0	226	102
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1248	56	0	107	0	0	304	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					29.5	29.5		15.0			15.0	
Effective Green, g (s)					29.5	29.5		15.0			15.0	
Actuated g/C Ratio					0.56	0.56		0.29			0.29	
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)					2004	873		443			513	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.35	0.04		0.07				
v/c Ratio					0.62	0.06		0.24			0.59	
Uniform Delay, d1					7.8	5.2		14.4			16.1	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.3			1.8	
Delay (s)					8.4	5.3		14.7			18.0	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.1			14.7			18.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	52.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.9%	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)	0	0	0	34	1305	5	18	8	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.97			1.00	
Satd. Flow (prot)					3324			1621			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3324			1676			1777	
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)	0	0	0	36	1388	5	19	9	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1429	0	0	28	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.8			1.3			1.3	
Effective Green, g (s)					30.3			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2512			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.43			c0.02				
v/c Ratio					0.57			0.37			0.29	
Uniform Delay, d1					2.1			18.6			18.5	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			3.1			2.0	
Delay (s)					2.4			21.7			20.5	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.4			21.7			20.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	43	1194	12	53	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	47	1312	13	58	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1325			0			773	1420	0	1420	1413	663
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1325			0			773	1420	0	1420	1413	663
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			76	89	100	100	85	97
cM capacity (veh/h)	517			1622			243	131	1084	88	135	409

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	703	669	73	32
Volume Left	47	0	58	0
Volume Right	0	13	0	12
cSH	1622	1700	208	181
Volume to Capacity	0.03	0.39	0.35	0.18
Queue Length 95th (ft)	2	0	37	16
Control Delay (s)	0.8	0.0	31.2	29.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		31.2	29.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1182	2	512	26	0	0	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3361		1618	1631				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1618	1631				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1328	2	575	29	0	0	0	9
RTOR Reduction (vph)	0	0	0	0	0	0	153	153	0	0	0	9
Lane Group Flow (vph)	0	0	0	0	1330	0	146	152	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.2		10.9	10.9				0.7
Effective Green, g (s)					29.2		11.9	11.9				1.7
Actuated g/C Ratio					0.53		0.22	0.22				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1791		351	354				50
v/s Ratio Prot					c0.40							
v/s Ratio Perm							0.09	0.09				c0.00
v/c Ratio					0.74		0.41	0.43				0.01
Uniform Delay, d1					9.9		18.5	18.5				25.7
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.7		0.8	0.8				0.0
Delay (s)					11.6		19.3	19.3				25.8
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.6			19.3			25.8	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1274	192	0	92
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1341	202	0	97
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1341				1341	671
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1341				1341	671
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	75
cM capacity (veh/h)	510				141	394

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	671	671	202	97
Volume Left	0	0	0	0
Volume Right	0	0	202	97
cSH	1700	1700	1700	394
Volume to Capacity	0.39	0.39	0.12	0.25
Queue Length 95th (ft)	0	0	0	24
Control Delay (s)	0.0	0.0	0.0	17.1
Lane LOS				C
Approach Delay (s)	0.0			17.1
Approach LOS				C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
479: Sumner Avenue/N Alder Street/Lincoln Street #1011 & 6th Street

8/19/2009

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	495	1108	0	0	9	100	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	510	1142	0	0	9	103	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			510	510	510	1653	1653	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			510	510	510	1653	1653	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	0	100	
cM capacity (veh/h)			466	563	474	98	390	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	891	762	9	103
Volume Left	0	0	9	0
Volume Right	381	762	0	0
cSH	1700	1700	474	98
Volume to Capacity	0.52	0.45	0.02	1.05
Queue Length 95th (ft)	0	0	1	163
Control Delay (s)	0.0	0.0	12.8	184.0
Lane LOS			B	F
Approach Delay (s)	0.0		169.9	
Approach LOS			F	

Intersection Summary			
Average Delay	10.8		
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	53	0	0	1230	0	487
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	0	0	1337	0	529
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	58	0	0	1337	0	529
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.3			47.6		69.9
Effective Green, g (s)	13.8			48.1		69.9
Actuated g/C Ratio	0.20			0.69		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	349			2412		2787
v/s Ratio Prot	0.03			c0.38		
v/s Ratio Perm						c0.19
v/c Ratio	0.17			0.55		0.19
Uniform Delay, d1	23.3			5.5		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	23.4			6.4		0.1
Level of Service	C			A		A
Approach Delay (s)	23.4			6.4	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	4.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	632	599	487	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1694	1845	3467	
Flt Permitted			0.37	1.00	1.00	
Satd. Flow (perm)			663	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	658	624	507	39
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	658	624	540	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			50.7	55.2	25.3	
Effective Green, g (s)			51.7	55.7	25.8	
Actuated g/C Ratio			0.74	0.80	0.37	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			872	1470	1280	
v/s Ratio Prot			c0.28	0.34	0.16	
v/s Ratio Perm			c0.28			
v/c Ratio			0.75	0.42	0.42	
Uniform Delay, d1			4.7	2.2	16.5	
Progression Factor			0.56	0.08	1.00	
Incremental Delay, d2			2.9	0.7	0.1	
Delay (s)			5.5	0.9	16.6	
Level of Service			A	A	B	
Approach Delay (s)	0.0			3.3	16.6	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	7.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	18.2
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	966	222	0	0	0	22	0	567	152	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.97				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2704				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2704				
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)	1039	239	0	0	0	24	0	610	163	0	0	0
RTOR Reduction (vph)	345	88	0	0	0	23	0	24	0	0	0	0
Lane Group Flow (vph)	289	556	0	0	0	1	0	749	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	8%	17%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	25.6	25.6				2.5		29.9				
Effective Green, g (s)	26.1	26.1				1.5		30.4				
Actuated g/C Ratio	0.37	0.37				0.02		0.43				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	603	620				27		1174				
v/s Ratio Prot								c0.28				
v/s Ratio Perm	0.18	0.33				c0.00						
v/c Ratio	0.48	0.90				0.02		0.64				
Uniform Delay, d1	16.8	20.7				33.5		15.5				
Progression Factor	1.22	0.32				1.00		1.00				
Incremental Delay, d2	1.6	12.0				0.1		1.1				
Delay (s)	22.0	18.5				33.6		16.6				
Level of Service	C	B				C		B				
Approach Delay (s)		20.2			33.6			16.6			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	22	0	0	176	18	53	1509	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1645			4933				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1271			1645			4933				
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)	17	23	0	0	185	19	56	1588	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	40	0	0	198	0	0	1650	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	15%	5%	3%	5%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		13.9			13.9			47.1				
Effective Green, g (s)		14.4			14.4			47.6				
Actuated g/C Ratio		0.21			0.21			0.68				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		261			338			3354				
v/s Ratio Prot					c0.12							
v/s Ratio Perm		0.03						0.33				
v/c Ratio		0.15			0.59			0.49				
Uniform Delay, d1		22.8			25.1			5.4				
Progression Factor		1.02			1.00			0.91				
Incremental Delay, d2		0.3			2.6			0.4				
Delay (s)		23.5			27.7			5.3				
Level of Service		C			C			A				
Approach Delay (s)		23.5			27.7			5.3			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

SyncTro 7 Report

HCM Signalized Intersection Capacity Analysis
306: S "L" Street & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	92	147	0	0	98	116	72	1549	105	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.98	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1732	1504		4522				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1234			1732	1504		4522				
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)	97	155	0	0	103	122	76	1631	111	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	19	0	9	0	0	0	0
Lane Group Flow (vph)	0	252	0	0	111	86	0	1809	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	6%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.5			17.5	17.5		44.0				
Effective Green, g (s)		18.0			18.0	18.0		44.0				
Actuated g/C Ratio		0.26			0.26	0.26		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		317			445	387		2842				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.06		0.40				
v/c Ratio		0.79			0.25	0.22		0.64				
Uniform Delay, d1		24.3			20.6	20.5		8.0				
Progression Factor		0.93			1.00	1.00		2.12				
Incremental Delay, d2		12.0			0.3	0.3		1.0				
Delay (s)		34.7			20.9	20.8		18.0				
Level of Service		C			C	C		B				
Approach Delay (s)		34.7			20.9			18.0			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
307: S "K" Street & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	78	31	0	0	73	32	28	1544	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1786			4382				
Flt Permitted		0.70			1.00			1.00				
Satd. Flow (perm)		1310			1786			4382				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	90	36	0	0	84	37	32	1775	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	126	0	0	106	0	0	1856	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.7			11.7			49.8				
Effective Green, g (s)		12.2			12.2			49.8				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		228			311			3117				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.10						0.42				
v/c Ratio		0.55			0.34			0.60				
Uniform Delay, d1		26.4			25.4			5.1				
Progression Factor		1.60			1.00			0.23				
Incremental Delay, d2		2.8			0.7			0.7				
Delay (s)		45.1			26.0			1.9				
Level of Service		D			C			A				
Approach Delay (s)		45.1			26.0			1.9			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	238	26	0	0	32	18	62	1715	22	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4391				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1057			1418			4391				
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)	253	28	0	0	34	19	66	1824	23	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	281	0	0	44	0	0	1911	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.7			20.7			39.3				
Effective Green, g (s)		21.2			21.2			40.8				
Actuated g/C Ratio		0.30			0.30			0.58				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		320			429			2559				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.27						0.44				
v/c Ratio		0.88			0.10			0.75				
Uniform Delay, d1		23.2			17.6			10.8				
Progression Factor		0.68			1.00			0.61				
Incremental Delay, d2		22.3			0.1			1.7				
Delay (s)		38.0			17.7			8.2				
Level of Service		D			B			A				
Approach Delay (s)		38.0			17.7			8.2			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	54	15	0	0	8	10	23	1686	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.93			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1380			4395				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1132			1380			4395				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	61	17	0	0	9	11	26	1916	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	78	0	0	10	0	0	1959	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		150			183			3309				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.45				
v/c Ratio		0.52			0.06			0.59				
Uniform Delay, d1		28.3			26.5			3.9				
Progression Factor		0.82			1.00			0.24				
Incremental Delay, d2		3.1			0.1			0.5				
Delay (s)		26.4			26.7			1.4				
Level of Service		C			C			A				
Approach Delay (s)		26.4			26.7			1.4			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	70.0	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			

Synchro 7 - Report

HCM Signalized Intersection Capacity Analysis
310: S "I" Street & W Wishkah Street #1011

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	57	38	35	36	0	0	0	0	17	1450	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4427	
Flt Permitted		1.00			0.79						1.00	
Satd. Flow (perm)		1410			1184						4427	
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)	0	63	42	39	40	0	0	0	0	19	1611	41
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	81	0	0	79	0	0	0	0	0	1669	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.9	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		183			154						3346	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.07						0.38	
v/c Ratio		0.44			0.51						0.50	
Uniform Delay, d1		28.1			28.4						3.4	
Progression Factor		1.00			0.96						0.67	
Incremental Delay, d2		1.7			2.8						0.5	
Delay (s)		29.8			30.0						2.7	
Level of Service		C			C						A	
Approach Delay (s)		29.8			30.0			0.0			2.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	148	51	25	76	0	0	0	0	9	1306	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1443			1472						4407	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1443			1328						4407	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	161	55	27	83	0	0	0	0	10	1420	86
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	196	0	0	110	0	0	0	0	0	1509	0
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		14.6			14.6						45.4	
Effective Green, g (s)		15.1			15.1						46.9	
Actuated g/C Ratio		0.22			0.22						0.67	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		311			286						2953	
v/s Ratio Prot		c0.14										
v/s Ratio Perm					0.08						0.34	
v/c Ratio		0.63			0.38						0.51	
Uniform Delay, d1		24.9			23.5						5.8	
Progression Factor		1.00			0.95						0.28	
Incremental Delay, d2		3.9			0.8						0.6	
Delay (s)		28.9			23.0						2.2	
Level of Service		C			C						A	
Approach Delay (s)		28.9			23.0			0.0			2.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
312: S "K" Street & W Wishkah Street #1011

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	77	21	16	45	0	0	0	0	19	1336	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1447			1471						4430	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1447			1340						4430	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	84	23	17	49	0	0	0	0	21	1452	28
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	90	0	0	66	0	0	0	0	0	1499	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.9	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		188			174						3348	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.34	
v/c Ratio		0.48			0.38						0.45	
Uniform Delay, d1		28.2			27.9						3.2	
Progression Factor		1.00			0.51						0.22	
Incremental Delay, d2		1.9			1.3						0.4	
Delay (s)		30.1			15.7						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.1			15.7			0.0			1.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	106	30	73	93	0	0	0	0	133	1197	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1811			1823						4572	
Flt Permitted		1.00			0.82						1.00	
Satd. Flow (perm)		1811			1522						4572	
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)	0	112	32	77	98	0	0	0	0	140	1260	33
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	129	0	0	175	0	0	0	0	0	1430	0
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		530			446						2711	
v/s Ratio Prot		0.07										
v/s Ratio Perm					c0.11						0.31	
v/c Ratio		0.24			0.39						0.53	
Uniform Delay, d1		18.8			19.8						8.4	
Progression Factor		1.00			0.96						0.82	
Incremental Delay, d2		1.1			2.4						0.7	
Delay (s)		19.9			21.4						7.6	
Level of Service		B			C						A	
Approach Delay (s)		19.9			21.4			0.0			7.6	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	43	173	0	0	0	0	22	510	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.94	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1349						2559	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1349						2559	1400
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)	0	0	0	46	184	0	0	0	0	23	543	830
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	98	163
Lane Group Flow (vph)	0	0	0	0	230	0	0	0	0	0	858	277
Heavy Vehicles (%)	2%	2%	2%	42%	4%	2%	2%	2%	2%	0%	10%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					17.5						43.5	43.5
Effective Green, g (s)					18.0						44.0	44.0
Actuated g/C Ratio					0.26						0.63	0.63
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					347						1609	880
v/s Ratio Prot												
v/s Ratio Perm					0.17						0.34	0.20
v/c Ratio					0.66						0.53	0.31
Uniform Delay, d1					23.3						7.3	6.0
Progression Factor					0.84						0.58	0.33
Incremental Delay, d2					4.5						1.1	0.8
Delay (s)					24.1						5.3	2.8
Level of Service					C						A	A
Approach Delay (s)		0.0			24.1			0.0			4.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1131	38	0	0	0	0	0	0	19	513	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3107									2722	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3107									2722	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1300	44	0	0	0	0	0	0	22	590	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	1341	0	0	0	0	0	0	0	0	607	0
Heavy Vehicles (%)	0%	4%	6%	2%	2%	2%	2%	2%	2%	0%	13%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		37.8									23.2	
Effective Green, g (s)		38.3									23.7	
Actuated g/C Ratio		0.55									0.34	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1700									922	
v/s Ratio Prot		c0.43										
v/s Ratio Perm											0.22	
v/c Ratio		0.79									0.66	
Uniform Delay, d1		12.6									19.7	
Progression Factor		0.79									1.44	
Incremental Delay, d2		3.3									1.5	
Delay (s)		13.3									29.8	
Level of Service		B									C	
Approach Delay (s)		13.3			0.0			0.0			29.8	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	120	670	0	0	0	0	0	1523	419	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1242			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1242			
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)	126	705	0	0	0	0	0	1603	441	0	0	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	36	0	0	0
Lane Group Flow (vph)	0	821	0	0	0	0	0	1603	405	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	4%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		19.4						42.1	42.1			
Effective Green, g (s)		19.4						42.6	42.6			
Actuated g/C Ratio		0.28						0.61	0.61			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1268						1865	756			
v/s Ratio Prot								c0.52				
v/s Ratio Perm		0.18							0.33			
v/c Ratio		0.65						0.86	0.54			
Uniform Delay, d1		22.3						11.2	8.0			
Progression Factor		0.89						1.81	2.02			
Incremental Delay, d2		1.1						4.7	2.3			
Delay (s)		20.8						25.0	18.4			
Level of Service		C						C	B			
Approach Delay (s)		20.8			0.0			23.6			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	594	419	81	1465	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3261			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3261			2943				
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)	0	0	0	0	612	432	84	1510	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1028	0	0	1588	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					23.7			37.3				
Effective Green, g (s)					24.2			37.8				
Actuated g/C Ratio					0.35			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1127			1589				
v/s Ratio Prot					c0.32							
v/s Ratio Perm								0.54				
v/c Ratio					0.91			1.00				
Uniform Delay, d1					21.9			16.1				
Progression Factor					1.00			0.79				
Incremental Delay, d2					11.1			16.3				
Delay (s)					33.0			29.1				
Level of Service					C			C				
Approach Delay (s)		0.0			33.0			29.1			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	275	49	0	0	0	0	0	0	373	1244	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2940									4395	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2940									4395	
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)	0	296	53	0	0	0	0	0	0	401	1338	0
RTOR Reduction (vph)	0	25	0	0	0	0	0	0	0	0	53	0
Lane Group Flow (vph)	0	324	0	0	0	0	0	0	0	0	1686	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.9									48.1	
Effective Green, g (s)		13.4									48.6	
Actuated g/C Ratio		0.19									0.69	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		563									3051	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.38	
v/c Ratio		0.58									0.55	
Uniform Delay, d1		25.7									5.3	
Progression Factor		1.00									0.63	
Incremental Delay, d2		1.4									0.6	
Delay (s)		27.1									4.0	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			4.0	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	360	305	0	0	0	0	0	1372	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.98						1.00	
Satd. Flow (prot)				1264	3273						4416	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1264	3273						4416	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	391	332	0	0	0	0	0	1491	70
RTOR Reduction (vph)	0	0	0	18	18	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	217	470	0	0	0	0	0	1555	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				17.8	17.8						43.2	
Effective Green, g (s)				18.3	18.3						43.7	
Actuated g/C Ratio				0.26	0.26						0.62	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				330	856						2757	
v/s Ratio Prot				c0.17	0.14						c0.35	
v/s Ratio Perm												
v/c Ratio				0.66	0.55						0.56	
Uniform Delay, d1				23.0	22.3						7.6	
Progression Factor				1.13	1.19						1.00	
Incremental Delay, d2				2.1	0.3						0.8	
Delay (s)				28.1	26.9						8.5	
Level of Service				C	C						A	
Approach Delay (s)		0.0			27.3			0.0			8.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1290	37	28	1113	2	356	9	18	17	4	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.95	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.98	
Satd. Flow (prot)		3329		1727	3342		1681	1673			1732	
Flt Permitted		0.93		0.95	1.00		0.95	0.96			0.98	
Satd. Flow (perm)		3084		1727	3342		1681	1673			1732	
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)	18	1518	44	33	1309	2	419	11	21	20	5	15
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	14	0
Lane Group Flow (vph)	0	1579	0	33	1311	0	226	222	0	0	26	0
Heavy Vehicles (%)	2%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	1%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.1		5.4	80.5		17.4	17.4			5.1	
Effective Green, g (s)		72.1		5.4	81.5		18.4	18.4			6.1	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1884		79	2308		262	261			90	
v/s Ratio Prot				0.02	c0.39		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.51										
v/c Ratio		0.84		0.42	0.57		0.86	0.85			0.29	
Uniform Delay, d1		18.3		54.8	9.3		48.6	48.4			53.9	
Progression Factor		1.00		1.03	0.60		1.00	1.00			1.00	
Incremental Delay, d2		4.6		2.7	0.8		24.1	21.8			1.8	
Delay (s)		22.9		59.0	6.4		72.7	70.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		22.9			7.7			71.5			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	1633	104	54	1166	0	220	9	111	52	19	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3313		1727	3343		1665	1553			1750	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3313		1727	3343		1665	1553			1750	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	27	1701	108	56	1215	0	229	9	116	54	20	26
RTOR Reduction (vph)	0	3	0	0	0	0	0	64	0	0	12	0
Lane Group Flow (vph)	27	1806	0	56	1215	0	183	107	0	0	88	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.0		7.7	66.1		14.6	14.6			11.7	
Effective Green, g (s)	6.6	66.0		7.7	67.1		15.6	15.6			12.7	
Actuated g/C Ratio	0.06	0.56		0.07	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1853		113	1901		220	205			188	
v/s Ratio Prot	0.02	c0.55		0.03	c0.36		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.28	0.97		0.50	0.64		0.83	0.52			0.47	
Uniform Delay, d1	53.4	25.2		53.3	17.2		49.9	47.7			49.5	
Progression Factor	0.80	0.63		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	12.9		2.5	1.7		23.2	2.7			2.1	
Delay (s)	43.7	28.8		55.8	18.9		73.1	50.4			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		29.0			20.5			62.1			51.6	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	830	3	533	760	0	326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.94	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3442		3145	1616		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3442		3145	1616		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1025	4	658	938	0	402
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1029	0	1089	507	0	402
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	30.1		33.2	75.3		33.2
Effective Green, g (s)	32.1		35.2	75.3		35.2
Actuated g/C Ratio	0.43		0.47	1.00		0.47
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1467		1470	1616		1242
v/s Ratio Prot	c0.30		c0.35	0.31		0.15
v/s Ratio Perm						
v/c Ratio	0.70		0.74	0.31		0.32
Uniform Delay, d1	17.7		16.3	0.0		12.6
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	1.4		1.9	0.5		0.1
Delay (s)	19.1		18.3	0.5		12.7
Level of Service	B		B	A		B
Approach Delay (s)	19.1		12.6		12.7	
Approach LOS	B		B		B	

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	75.3	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			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	21	0	0	9	19	647	1	3	346	56
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	22	0	0	9	20	681	1	3	364	59
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1138	1129	401	1116	1158	684	429			683		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1138	1129	401	1116	1158	684	429			683		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	172	200	649	176	192	452	1129			909		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	22	9	13	689	3	423
Volume Left	0	0	13	7	3	0
Volume Right	22	9	0	1	0	59
cSH	649	452	1129	1129	909	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.25
Queue Length 95th (ft)	3	2	1	1	0	0
Control Delay (s)	10.7	13.1	8.2	0.3	9.0	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.1	0.5		0.1	
Approach LOS	B	B				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
332: S M Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	25	1	10	0	2	4	14	602	2	2	298	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	27	1	11	0	2	4	15	647	2	2	320	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1023	1020	336	1015	1034	648	352			649		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1023	1020	336	1015	1034	648	352			649		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	100	98	100	99	99	99			100		
cM capacity (veh/h)	209	234	708	211	230	472	1213			937		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	39	6	15	649	2	352
Volume Left	27	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	261	349	1213	1700	937	1700
Volume to Capacity	0.15	0.02	0.01	0.38	0.00	0.21
Queue Length 95th (ft)	13	1	1	0	0	0
Control Delay (s)	21.2	15.5	8.0	0.0	8.9	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	21.2	15.5	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	17	400	2	2	226	168
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	20	460	2	2	260	193
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	867	862	356	768	957	461	453			462		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	867	862	356	768	957	461	453			462		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	92	100	100	100	98	99	98			100		
cM capacity (veh/h)	264	289	692	302	244	582	1118			1110		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	20	462	2	453
Volume Left	22	0	20	0	2	0
Volume Right	3	5	0	2	0	193
cSH	289	329	1118	1700	1110	1700
Volume to Capacity	0.09	0.03	0.02	0.27	0.00	0.27
Queue Length 95th (ft)	7	2	1	0	0	0
Control Delay (s)	18.7	16.3	8.3	0.0	8.3	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	18.7	16.3	0.3		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	36.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
336: Simpson Avenue/N Park Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	378	37	0	0	0	1	98	1	2	232	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	398	39	0	0	0	1	103	1	2	244	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			437			554	417	417	470	437	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			437			554	417	417	470	437	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	80	100	100	52	99
cM capacity (veh/h)	1604			1134			275	528	638	427	513	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	437	0	105	261
Volume Left	0	0	1	2
Volume Right	39	0	1	15
cSH	1604	1700	524	528
Volume to Capacity	0.00	0.00	0.20	0.49
Queue Length 95th (ft)	0	0	19	68
Control Delay (s)	0.0	0.0	13.6	18.3
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.6	18.3
Approach LOS			B	C

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	657	1	3	626	9	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	706	1	3	673	10	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			708		1387	707
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			708		1387	707
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		92	99
cM capacity (veh/h)			864		124	364

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	708	676	12
Volume Left	0	3	10
Volume Right	1	0	2
cSH	1700	864	141
Volume to Capacity	0.42	0.00	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.1	32.9
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	32.9
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	650	0	2	652	10	0	1	0	9	2	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	707	0	2	709	11	0	1	0	10	2	9
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	721			710			1458	1454	712	1448	1449	716
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	721			710			1458	1454	712	1448	1449	716
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	91	98	98
cM capacity (veh/h)	867			874			103	129	434	104	126	423

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	716	722	1	21
Volume Left	10	2	0	10
Volume Right	0	11	0	9
cSH	867	874	129	157
Volume to Capacity	0.01	0.00	0.01	0.13
Queue Length 95th (ft)	1	0	1	11
Control Delay (s)	0.3	0.1	33.1	31.3
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	33.1	31.3
Approach LOS			D	D

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
352: W Wishkah St & Williams Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	653	1	1	647	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	710	1	1	703	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	704			711			1420	1419	710	1420	1419	704
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	704			711			1420	1419	710	1420	1419	704
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	99	100	100
cM capacity (veh/h)	880			875			114	136	433	114	136	437

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	712	705	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	880	875	180	180
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	25.2	25.2
Lane LOS	A	A	D	D
Approach Delay (s)	0.0	0.0	25.2	25.2
Approach LOS			D	D

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	477	124	221	477	11	119	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	52	524	136	243	524	12	131	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	538			660			1747	1720	594	1719	1782	533
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	538			660			1747	1720	594	1719	1782	533
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			74			0	97	100	64	98	94
cM capacity (veh/h)	1013			928			48	63	507	52	57	545

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	712	779	135	54
Volume Left	52	243	131	19
Volume Right	136	12	2	34
cSH	1013	928	49	123
Volume to Capacity	0.05	0.26	2.75	0.44
Queue Length 95th (ft)	4	26	357	48
Control Delay (s)	1.3	5.9	966.2	55.5
Lane LOS	A	A	F	F
Approach Delay (s)	1.3	5.9	966.2	55.5
Approach LOS			F	F

Intersection Summary			
Average Delay	82.8		
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	497	0	0	27	709
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	540	0	0	29	771
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			829	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			829	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			334	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	540	29	771
Volume Left	0	29	0
Volume Right	540	0	0
cSH	1700	1578	1700
Volume to Capacity	0.32	0.02	0.45
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	510	5	0	283	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	560	5	0	311	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1124	1124	1126	0
vC1, stage 1 conf vol			1124	1124	0	
vC2, stage 2 conf vol			0	0	1126	
vCu, unblocked vol	0		1124	1124	1126	0
tC, single (s)	4.2		7.1	6.5	6.5	6.2
tC, 2 stage (s)			6.1	5.5	5.5	
tF (s)	2.3		3.5	4.0	4.0	3.3
p0 queue free %	65		100	0	100	100
cM capacity (veh/h)	1585		146	158	162	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	374	192	311
Volume Left	374	187	0
Volume Right	0	5	0
cSH	1585	1585	158
Volume to Capacity	0.35	0.35	1.97
Queue Length 95th (ft)	41	41	600
Control Delay (s)	8.5	8.4	507.5
Lane LOS	A	A	F
Approach Delay (s)	8.5		507.5
Approach LOS			F

Intersection Summary			
Average Delay	185.4		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
356: N Monroe Street & W Heron Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	22	3	0	0	172	8	12	769	21	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	25	3	0	0	195	9	14	874	24	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	571	925	0	915	913	449	0			898		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	571	925	0	915	913	449	0			898		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	99	100	100	28	98	99			100		
cM capacity (veh/h)	165	269	1091	226	271	560	1600			752		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	28	205	451	461
Volume Left	25	0	14	0
Volume Right	0	9	0	24
cSH	173	278	1600	1700
Volume to Capacity	0.16	0.74	0.01	0.27
Queue Length 95th (ft)	14	133	1	0
Control Delay (s)	29.8	47.1	0.3	0.0
Lane LOS	D	E	A	
Approach Delay (s)	29.8	47.1	0.1	
Approach LOS	D	E		

Intersection Summary				
Average Delay		9.3		
Intersection Capacity Utilization		45.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
357: N Lincoln Street & W Heron Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	8	6	0	0	16	2	5	783	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	8	6	0	0	17	2	5	816	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	429	831	2	834	829	410	0			821		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	429	831	2	834	829	410	0			821		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	95	100	100			100		
cM capacity (veh/h)	491	306	1086	259	307	596	1593			804		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	15	19	413	413
Volume Left	8	0	5	0
Volume Right	0	2	0	5
cSH	390	325	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.24
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	14.6	16.8	0.1	0.0
Lane LOS	B	C	A	
Approach Delay (s)	14.6	16.8	0.1	
Approach LOS	B	C		

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		36.4%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	92	9	38	728	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	107	10	44	847	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	579	949	4	947	945	431	3			857		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	579	949	4	947	945	431	3			857		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	95	97	100	100	52	98	97			100		
cM capacity (veh/h)	216	222	1019	181	223	524	1599			776		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	117	467	430
Volume Left	12	0	44	0
Volume Right	0	10	0	7
cSH	218	235	1599	1700
Volume to Capacity	0.09	0.50	0.03	0.25
Queue Length 95th (ft)	7	64	2	0
Control Delay (s)	23.0	34.6	0.9	0.0
Lane LOS	C	D	A	
Approach Delay (s)	23.0	34.6	0.5	
Approach LOS	C	D		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		39.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
359: N Washington Street & W Wishkah Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	18	86	42	0	0	0	0	3	536	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	21	102	50	0	0	0	0	4	638	11
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.86	0.86	0.86	0.86	0.86		0.86					
vC, conflicting volume	679	661	327	362	666	7	652			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	291	270	0	0	276	7	260			7		
tC, single (s)	7.8	6.8	7.0	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.3	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	98	87	91	100	100			100		
cM capacity (veh/h)	477	514	924	818	533	1055	1113			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	36	152	323	330
Volume Left	0	102	4	0
Volume Right	21	0	0	11
cSH	701	696	1541	1700
Volume to Capacity	0.05	0.22	0.00	0.19
Queue Length 95th (ft)	4	21	0	0
Control Delay (s)	10.4	11.6	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	10.4	11.6	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.6		
Intersection Capacity Utilization		37.5%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
360: N Lincoln Street & W Wishkah Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	613	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	659	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked	0.97	0.97	0.97	0.97	0.97		0.97					
vC, conflicting volume	696	688	338	363	695	4	672			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	636	628	268	294	634	4	611			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	346	389	717	603	386	1080	939			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	340	342
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	416	491	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.20
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	14.0	12.8	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	14.0	12.8	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		0.9		
Intersection Capacity Utilization		36.2%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	567	66	0	30	1	123	42	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	603	70	0	32	1	131	45	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	673			0			688	666	339	348	701	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	673			0			688	666	339	348	701	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	76	88	100
cM capacity (veh/h)	913			1565			302	379	663	542	360	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	315	372	33	176
Volume Left	14	0	0	131
Volume Right	0	70	1	0
cSH	1565	1700	385	480
Volume to Capacity	0.01	0.22	0.09	0.37
Queue Length 95th (ft)	1	0	7	41
Control Delay (s)	0.4	0.0	15.2	16.7
Lane LOS	A		C	C
Approach Delay (s)	0.2		15.2	16.7
Approach LOS			C	C

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
362: S Division Street & W Heron Street

8/19/2009

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	299	113	267	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	325	123	290	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	374			29			232	241	211	377	395	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	374			29			232	241	211	377	395	21
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	100			100			83	56	100	99	100	100
cM capacity (veh/h)	1185			1584			727	662	834	374	533	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	374	413	5
Volume Left	0	0	123	5
Volume Right	17	325	0	0
cSH	1185	1584	680	374
Volume to Capacity	0.00	0.00	0.61	0.01
Queue Length 95th (ft)	0	0	103	1
Control Delay (s)	0.0	0.0	18.1	14.8
Lane LOS			C	B
Approach Delay (s)	0.0	0.0	18.1	14.8
Approach LOS			C	B

Intersection Summary			
Average Delay	9.2		
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	123	343	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	134	373	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	509	373	374			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	509	373	374			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	523	673	1196			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	135	374
Volume Left	1	1	0
Volume Right	1	0	1
cSH	589	1196	1700
Volume to Capacity	0.00	0.00	0.22
Queue Length 95th (ft)	0	0	0
Control Delay (s)	11.1	0.1	0.0
Lane LOS	B	A	
Approach Delay (s)	11.1	0.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	28.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
371: Port Industrial Road & W 1st Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	35	489	4	4	559	6	16	3	5	5	0	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	40	562	5	5	643	7	18	3	6	6	0	49
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	643			567			1346	1297	564	1305	1302	646
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	643			567			1346	1297	564	1305	1302	646
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			83	98	99	95	100	89
cM capacity (veh/h)	901			1015			105	148	508	123	147	456

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	40	567	5	649	28	55
Volume Left	40	0	5	0	18	6
Volume Right	0	5	0	7	6	49
cSH	901	1700	1015	1700	132	355
Volume to Capacity	0.04	0.33	0.00	0.38	0.21	0.16
Queue Length 95th (ft)	4	0	0	0	19	14
Control Delay (s)	9.2	0.0	8.6	0.0	39.4	17.0
Lane LOS	A		A		E	C
Approach Delay (s)	0.6		0.1		39.4	17.0
Approach LOS					E	C

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
372: Port Industrial Road & Myrtle Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	413	10	15	490	119	9	14	39	68	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	449	11	16	533	129	10	15	42	74	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			460			1154	1186	454	1171	1127	597
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			460			1154	1186	454	1171	1127	597
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			98			93	91	93	48	97	94
cM capacity (veh/h)	890			1060			147	173	581	143	198	505

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	478	678	67	110
Volume Left	18	16	10	74
Volume Right	11	129	42	29
cSH	890	1060	296	181
Volume to Capacity	0.02	0.02	0.23	0.61
Queue Length 95th (ft)	2	1	21	84
Control Delay (s)	0.6	0.4	20.7	51.6
Lane LOS	A	A	C	F
Approach Delay (s)	0.6	0.4	20.7	51.6
Approach LOS			C	F

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	367	2	4	0	381	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	412	2	4	0	428	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	428			415			445	873	413	494	446	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	428			415			445	873	413	494	446	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	87	95	100	100	100
cM capacity (veh/h)	1105			531			516	283	639	410	498	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	415	4	428	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	428	33
cSH	1105	1700	531	1700	385
Volume to Capacity	0.01	0.24	0.01	0.25	0.18
Queue Length 95th (ft)	1	0	1	0	16
Control Delay (s)	8.3	0.0	11.8	0.0	16.4
Lane LOS	A		B		C
Approach Delay (s)	0.2		0.1		16.4
Approach LOS					C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/19/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	40	0	2	0	0	0	31	51	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	47	0	2	0	0	0	36	60	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		114	96	0	174	95	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		114	96	0	174	95	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	94	100	95	100
cM capacity (veh/h)	1554			1620		805	764	1076	706	774	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	49	0	96	40
Volume Left	47	0	0	2
Volume Right	2	0	60	0
cSH	1554	1700	932	770
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	363	4	15	469	31	10	8	25	32	8	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1771			1845			1761	1538		1749	
Flt Permitted		0.98			0.99			0.81	1.00		0.81	
Satd. Flow (perm)		1745			1824			1472	1538		1451	
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)	12	390	4	16	504	33	11	9	27	34	9	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	406	0	0	551	0	0	20	4	0	45	0
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		24.1			24.1			5.6	5.6		5.6	
Effective Green, g (s)		24.6			24.6			6.1	6.1		6.1	
Actuated g/C Ratio		0.64			0.64			0.16	0.16		0.16	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1109			1159			232	242		229	
v/s Ratio Prot												
v/s Ratio Perm		0.23			c0.30			0.01	0.00		c0.03	
v/c Ratio		0.37			0.48			0.09	0.02		0.20	
Uniform Delay, d1		3.3			3.7			13.9	13.8		14.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.2	0.0		0.4	
Delay (s)		3.6			4.0			14.1	13.8		14.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.6			4.0			13.9			14.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	38.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	207	15	2	278	19	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	235	17	2	316	22	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			252		556	235
vC1, stage 1 conf vol					235	
vC2, stage 2 conf vol					320	
vCu, unblocked vol			252		556	235
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		97	100
cM capacity (veh/h)			1319		633	775

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	235	17	2	316	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1319	1700	649
Volume to Capacity	0.14	0.01	0.00	0.19	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.8
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.8
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	24.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
400: Simpson Avenue/N Park Street #1012 & Market Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	121	1246	11	0	0	0	0	56	25	16	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3344						3237			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3344						3237			3066	
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)	130	1340	12	0	0	0	0	60	27	17	88	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	1482	0	0	0	0	0	63	0	0	105	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2623						328			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.44									c0.03	
v/c Ratio		0.56						0.19			0.34	
Uniform Delay, d1		2.9						28.8			29.3	
Progression Factor		1.00						1.00			0.58	
Incremental Delay, d2		0.9						0.3			0.6	
Delay (s)		3.8						29.1			17.5	
Level of Service		A						C			B	
Approach Delay (s)		3.8			0.0			29.1			17.5	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1204	65	0	0	0	0	81	123	79	83	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3335						1711			1621	
Flt Permitted		1.00						1.00			0.71	
Satd. Flow (perm)		3335						1711			1173	
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)	18	1416	76	0	0	0	0	95	145	93	98	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1506	0	0	0	0	0	217	0	0	191	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.8						15.3			15.3	
Effective Green, g (s)		31.8						15.3			15.3	
Actuated g/C Ratio		0.58						0.28			0.28	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1925						475			326	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.45									c0.16	
v/c Ratio		0.78						0.46			0.59	
Uniform Delay, d1		9.0						16.5			17.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.1						0.7			2.7	
Delay (s)		11.0						17.2			19.8	
Level of Service		B						B			B	
Approach Delay (s)		11.0			0.0			17.2			19.8	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1191	18	0	0	0	0	26	25	26	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3352						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3352						1597			1348	
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)	24	1228	19	0	0	0	0	27	26	27	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1270	0	0	0	0	0	30	0	0	56	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		31.0						4.5			4.5	
Effective Green, g (s)		31.5						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2373						179			151	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.38									c0.04	
v/c Ratio		0.54						0.17			0.37	
Uniform Delay, d1		3.1						17.9			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.4			1.5	
Delay (s)		3.3						18.3			19.8	
Level of Service		A						B			B	
Approach Delay (s)		3.3			0.0			18.3			19.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	44.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
418: Simpson Avenue/N Park Street #1012 & Ontario Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	48	1214	19	0	0	0	0	31	37	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	49	1252	20	0	0	0	0	32	38	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1271			1384	1360	636	779	1370	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1271			1384	1360	636	779	1370	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	77	91	79	68	100
cM capacity (veh/h)	1607			542			75	141	418	212	143	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	675	645	70	92
Volume Left	49	0	0	45
Volume Right	0	20	38	0
cSH	1607	1700	221	171
Volume to Capacity	0.03	0.38	0.32	0.54
Queue Length 95th (ft)	2	0	33	68
Control Delay (s)	0.9	0.0	28.7	48.3
Lane LOS	A		D	E
Approach Delay (s)	0.4		28.7	48.3
Approach LOS			D	E

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	876	12	0	0	0	0	458	9	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3323						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	952	13	0	0	0	0	498	10	0	0	0
RTOR Reduction (vph)	55	2	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	55	964	0	0	0	0	0	506	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	20.0	20.0						12.0				
Effective Green, g (s)	21.0	21.0						13.0				
Actuated g/C Ratio	0.50	0.50						0.31				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	876	1662						1081				
v/s Ratio Prot		c0.29						c0.14				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.58						0.47				
Uniform Delay, d1	5.4	7.4						11.7				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.5						0.3				
Delay (s)	5.5	7.9						12.0				
Level of Service	A	A						B				
Approach Delay (s)		7.6			0.0			12.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1166	71	0	0	0	0	27	174	42	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1575	1504		1811	
Flt Permitted		1.00	1.00					1.00	1.00		0.74	
Satd. Flow (perm)		2893	1300					1575	1504		1385	
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)	18	1254	76	0	0	0	0	29	187	45	34	0
RTOR Reduction (vph)	0	0	8	0	0	0	0	36	36	0	0	0
Lane Group Flow (vph)	0	1272	68	0	0	0	0	73	71	0	79	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.0	53.0					8.0	8.0		8.0	
Effective Green, g (s)		53.5	53.5					8.5	8.5		8.5	
Actuated g/C Ratio		0.76	0.76					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2211	994					191	183		168	
v/s Ratio Prot		c0.44						0.05				
v/s Ratio Perm			0.05						0.05		c0.06	
v/c Ratio		0.58	0.07					0.38	0.39		0.47	
Uniform Delay, d1		3.5	2.1					28.3	28.4		28.7	
Progression Factor		0.28	0.30					1.00	1.00		1.00	
Incremental Delay, d2		1.0	0.1					1.3	1.4		2.1	
Delay (s)		1.9	0.7					29.6	29.7		30.7	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.9			0.0			29.7			30.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	24	1136	25	0	0	0	0	12	88	8	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2883						1314			1459	
Flt Permitted		1.00						1.00			0.86	
Satd. Flow (perm)		2883						1314			1286	
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)	25	1196	26	0	0	0	0	13	93	8	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	43	0	0	0	0
Lane Group Flow (vph)	0	1246	0	0	0	0	0	63	0	0	19	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.1						7.9			7.9	
Effective Green, g (s)		54.1						7.9			7.9	
Actuated g/C Ratio		0.77						0.11			0.11	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2228						148			145	
v/s Ratio Prot								c0.05				
v/s Ratio Perm		0.43									0.01	
v/c Ratio		0.56						0.43			0.13	
Uniform Delay, d1		3.2						28.9			28.0	
Progression Factor		0.38						1.00			1.00	
Incremental Delay, d2		0.7						2.0			0.4	
Delay (s)		1.9						30.9			28.4	
Level of Service		A						C			C	
Approach Delay (s)		1.9			0.0			30.9			28.4	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	968	16	0	0	0	0	0	44	303	227	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2888							1302	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2888							1302	1681	1405	
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)	0	1019	17	0	0	0	0	0	46	319	239	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	39	155	10	0
Lane Group Flow (vph)	0	1034	0	0	0	0	0	0	7	120	274	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	1%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		29.0							9.5	18.0	18.0	
Effective Green, g (s)		29.5							10.0	18.5	18.5	
Actuated g/C Ratio		0.42							0.14	0.26	0.26	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1217							186	444	371	
v/s Ratio Prot		c0.36							c0.01	0.07	c0.20	
v/s Ratio Perm												
v/c Ratio		0.85							0.04	0.27	0.74	
Uniform Delay, d1		18.3							25.8	20.4	23.5	
Progression Factor		1.11							1.00	1.00	1.00	
Incremental Delay, d2		6.9							0.4	1.5	12.5	
Delay (s)		27.2							26.2	21.9	36.0	
Level of Service		C							C	C	D	
Approach Delay (s)		27.2			0.0			26.2			29.1	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	8	415	12	0	0	0	0	45	26	490	48	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2880						1416		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2880						1416		1681	1360	
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)	9	441	13	0	0	0	0	48	28	521	51	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	460	0	0	0	0	0	51	0	287	285	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		18.7						6.8		31.0	31.0	
Effective Green, g (s)		19.2						7.3		31.5	31.5	
Actuated g/C Ratio		0.27						0.10		0.45	0.45	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		790						148		756	612	
v/s Ratio Prot								c0.04		0.17	c0.21	
v/s Ratio Perm		0.16										
v/c Ratio		0.58						0.34		0.38	0.47	
Uniform Delay, d1		21.9						29.1		12.8	13.4	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.1						1.4		1.4	2.5	
Delay (s)		23.0						30.5		14.2	15.9	
Level of Service		C						C		B	B	
Approach Delay (s)		23.0			0.0			30.5			15.1	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	339	0	538	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1791		2111		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1791		2111		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	377	0	598	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	377	0	598	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		29.6		29.6		
Effective Green, g (s)		29.6		29.6		
Actuated g/C Ratio		0.75		0.75		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1335		1574		
v/s Ratio Prot		0.21		c0.28		
v/s Ratio Perm						
v/c Ratio		0.28		0.38		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.2		
Delay (s)		1.7		1.9		
Level of Service		A		A		
Approach Delay (s)	1.7			1.9	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	39.7	Sum of lost time (s)	10.1
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
450: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Market Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	919	23	18	167	0	0	92	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					3490			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3490			3044			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	957	24	19	174	0	0	96	258
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	73	0
Lane Group Flow (vph)	0	0	0	0	994	0	0	193	0	0	281	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					48.8			12.2			12.2	
Effective Green, g (s)					49.3			12.7			12.7	
Actuated g/C Ratio					0.70			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2458			552			543	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.28			0.06				
v/c Ratio					0.40			0.35			0.52	
Uniform Delay, d1					4.3			25.0			25.9	
Progression Factor					1.37			1.04			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					6.3			26.3			26.7	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.3			26.3			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1227	19	13	389	0	0	52	278
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	4.0
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3353			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3353			1679			1710	1615
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)	0	0	0	15	1305	20	14	414	0	0	55	296
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	47
Lane Group Flow (vph)	0	0	0	0	1338	0	0	428	0	0	55	249
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2060			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.40			c0.25				0.15
v/c Ratio					0.65			0.94			0.12	0.57
Uniform Delay, d1					8.7			24.9			19.2	22.0
Progression Factor					0.66			1.00			1.00	1.00
Incremental Delay, d2					1.5			29.3			0.5	5.3
Delay (s)					7.2			54.2			19.7	27.3
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.2			54.2			26.1	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1142	94	32	69	0	0	215	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3567	1554		1815			1795	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3567	1554		1552			1795	
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)	0	0	0	46	1202	99	34	73	0	0	226	102
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1248	56	0	107	0	0	304	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					29.5	29.5		15.0			15.0	
Effective Green, g (s)					29.5	29.5		15.0			15.0	
Actuated g/C Ratio					0.56	0.56		0.29			0.29	
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)					2004	873		443			513	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.35	0.04		0.07				
v/c Ratio					0.62	0.06		0.24			0.59	
Uniform Delay, d1					7.8	5.2		14.4			16.1	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.3			1.8	
Delay (s)					8.4	5.3		14.7			18.0	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.1			14.7			18.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	52.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.9%	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)	0	0	0	34	1305	5	18	8	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.97			1.00	
Satd. Flow (prot)					3324			1621			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3324			1676			1777	
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)	0	0	0	36	1388	5	19	9	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1429	0	0	28	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.8			1.3			1.3	
Effective Green, g (s)					30.3			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2512			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.43			c0.02				
v/c Ratio					0.57			0.37			0.29	
Uniform Delay, d1					2.1			18.6			18.5	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			3.1			2.0	
Delay (s)					2.4			21.7			20.5	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.4			21.7			20.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	43	1194	12	53	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	47	1312	13	58	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1325			0			773	1420	0	1420	1413	663
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1325			0			773	1420	0	1420	1413	663
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			76	89	100	100	85	97
cM capacity (veh/h)	517			1622			243	131	1084	88	135	409

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	703	669	73	32
Volume Left	47	0	58	0
Volume Right	0	13	0	12
cSH	1622	1700	208	181
Volume to Capacity	0.03	0.39	0.35	0.18
Queue Length 95th (ft)	2	0	37	16
Control Delay (s)	0.8	0.0	31.2	29.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		31.2	29.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
471: Sumner Avenue/N Alder Street/Lincoln Street #1011 & 23rd Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1182	2	512	26	0	0	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3361		1618	1631				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1618	1631				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1328	2	575	29	0	0	0	9
RTOR Reduction (vph)	0	0	0	0	0	0	153	153	0	0	0	9
Lane Group Flow (vph)	0	0	0	0	1330	0	146	152	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.2		10.9	10.9				0.7
Effective Green, g (s)					29.2		11.9	11.9				1.7
Actuated g/C Ratio					0.53		0.22	0.22				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1791		351	354				50
v/s Ratio Prot					c0.40							
v/s Ratio Perm							0.09	0.09				c0.00
v/c Ratio					0.74		0.41	0.43				0.01
Uniform Delay, d1					9.9		18.5	18.5				25.7
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.7		0.8	0.8				0.0
Delay (s)					11.6		19.3	19.3				25.8
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.6			19.3			25.8	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1274	192	0	96
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1341	202	0	101
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1341				1341	671
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1341				1341	671
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	74
cM capacity (veh/h)	510				141	394

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	671	671	202	101
Volume Left	0	0	0	0
Volume Right	0	0	202	101
cSH	1700	1700	1700	394
Volume to Capacity	0.39	0.39	0.12	0.26
Queue Length 95th (ft)	0	0	0	25
Control Delay (s)	0.0	0.0	0.0	17.2
Lane LOS				C
Approach Delay (s)	0.0			17.2
Approach LOS				C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
479: Sumner Avenue/N Alder Street/Lincoln Street #1011 & 6th Street

8/19/2009

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	499	1108	0	0	9	100	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	514	1142	0	0	9	103	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			514	514	514	1657	1657	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			514	514	514	1657	1657	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	0	100	
cM capacity (veh/h)			464	560	471	98	389	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	895	762	9	103
Volume Left	0	0	9	0
Volume Right	381	762	0	0
cSH	1700	1700	471	98
Volume to Capacity	0.53	0.45	0.02	1.05
Queue Length 95th (ft)	0	0	2	164
Control Delay (s)	0.0	0.0	12.8	186.5
Lane LOS			B	F
Approach Delay (s)	0.0		172.2	
Approach LOS			F	

Intersection Summary			
Average Delay	10.9		
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	53	0	0	1230	0	497
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	0	0	1337	0	540
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	58	0	0	1337	0	540
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.3			47.7		70.0
Effective Green, g (s)	13.8			48.2		70.0
Actuated g/C Ratio	0.20			0.69		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	349			2413		2787
v/s Ratio Prot	0.03			c0.38		
v/s Ratio Perm						c0.19
v/c Ratio	0.17			0.55		0.19
Uniform Delay, d1	23.3			5.5		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	23.4			6.3		0.1
Level of Service	C			A		A
Approach Delay (s)	23.4			6.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	632	599	497	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1694	1845	3468	
Flt Permitted			0.36	1.00	1.00	
Satd. Flow (perm)			651	1845	3468	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	658	624	518	39
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	658	624	551	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			50.8	55.3	25.4	
Effective Green, g (s)			51.8	55.8	25.9	
Actuated g/C Ratio			0.74	0.80	0.37	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			868	1471	1283	
v/s Ratio Prot			c0.28	0.34	0.16	
v/s Ratio Perm			c0.28			
v/c Ratio			0.76	0.42	0.43	
Uniform Delay, d1			4.9	2.2	16.5	
Progression Factor			0.56	0.08	1.00	
Incremental Delay, d2			3.0	0.7	0.1	
Delay (s)			5.7	0.9	16.6	
Level of Service			A	A	B	
Approach Delay (s)	0.0			3.4	16.6	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	7.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	947	218	0	0	0	21	0	646	143	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.97				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2449				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2449				
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)	1018	234	0	0	0	23	0	695	154	0	0	0
RTOR Reduction (vph)	355	91	0	0	0	22	0	19	0	0	0	0
Lane Group Flow (vph)	266	540	0	0	0	1	0	830	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	23%	17%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	24.2	24.2				2.5		31.3				
Effective Green, g (s)	24.7	24.7				1.5		31.8				
Actuated g/C Ratio	0.35	0.35				0.02		0.45				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	571	587				27		1113				
v/s Ratio Prot								c0.34				
v/s Ratio Perm	0.16	0.33				c0.00						
v/c Ratio	0.47	0.92				0.05		0.75				
Uniform Delay, d1	17.5	21.7				33.6		15.8				
Progression Factor	1.25	0.31				1.00		1.00				
Incremental Delay, d2	1.6	14.7				0.3		2.8				
Delay (s)	23.6	21.4				33.9		18.5				
Level of Service	C	C				C		B				
Approach Delay (s)		22.5			33.9			18.5			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	21	0	0	158	18	45	1577	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1631			4674				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1270			1631			4674				
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)	17	22	0	0	166	19	47	1660	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	180	0	0	1713	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	16%	5%	4%	11%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		13.2			13.2			47.8				
Effective Green, g (s)		13.7			13.7			48.3				
Actuated g/C Ratio		0.20			0.20			0.69				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		249			319			3225				
v/s Ratio Prot					c0.11							
v/s Ratio Perm		0.03						0.37				
v/c Ratio		0.16			0.56			0.53				
Uniform Delay, d1		23.4			25.5			5.3				
Progression Factor		1.03			1.00			0.99				
Incremental Delay, d2		0.3			2.3			0.4				
Delay (s)		24.4			27.7			5.6				
Level of Service		C			C			A				
Approach Delay (s)		24.4			27.7			5.6			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	64	1629	96	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1712	1504		4340				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4340				
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)	95	152	0	0	86	120	67	1715	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	16	0	8	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	80	0	1875	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	11%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.3			17.3	17.3		44.2				
Effective Green, g (s)		17.8			17.8	17.8		44.2				
Actuated g/C Ratio		0.25			0.25	0.25		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		316			435	382		2740				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.43				
v/c Ratio		0.78			0.22	0.21		0.68				
Uniform Delay, d1		24.3			20.6	20.6		8.4				
Progression Factor		0.93			1.00	1.00		2.07				
Incremental Delay, d2		11.1			0.3	0.3		1.3				
Delay (s)		33.7			20.9	20.8		18.6				
Level of Service		C			C	C		B				
Approach Delay (s)		33.7			20.9			18.6			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
307: S "K" Street & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	76	31	0	0	71	32	28	1625	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1785			4194				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4194				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	87	36	0	0	82	37	32	1868	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	12	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	107	0	0	1949	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	11%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.5			11.5			50.0				
Effective Green, g (s)		12.0			12.0			50.0				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		227			306			2996				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.09						0.46				
v/c Ratio		0.54			0.35			0.65				
Uniform Delay, d1		26.5			25.6			5.3				
Progression Factor		1.60			1.00			0.23				
Incremental Delay, d2		2.6			0.7			0.8				
Delay (s)		45.0			26.2			2.1				
Level of Service		D			C			A				
Approach Delay (s)		45.0			26.2			2.1			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	233	25	0	0	32	18	54	1799	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4201				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4201				
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)	248	27	0	0	34	19	57	1914	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	7	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	275	0	0	46	0	0	1991	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	11%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.4			20.4			39.6				
Effective Green, g (s)		20.9			20.9			41.1				
Actuated g/C Ratio		0.30			0.30			0.59				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		315			423			2467				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.47				
v/c Ratio		0.87			0.11			0.81				
Uniform Delay, d1		23.3			17.8			11.3				
Progression Factor		0.67			1.00			0.60				
Incremental Delay, d2		22.1			0.1			2.3				
Delay (s)		37.7			17.9			9.2				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.9			9.2			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1771	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1374			4202				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1374			4202				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	60	17	0	0	8	11	25	2012	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	10	0	0	2054	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	11%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		151			183			3164				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.49				
v/c Ratio		0.51			0.06			0.65				
Uniform Delay, d1		28.2			26.5			4.2				
Progression Factor		0.83			1.00			0.21				
Incremental Delay, d2		2.6			0.1			0.6				
Delay (s)		26.1			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		26.1			26.6			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	56	37	34	35	0	0	0	0	17	1478	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4196	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1185						4196	
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)	0	62	41	38	39	0	0	0	0	19	1642	40
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	80	0	0	77	0	0	0	0	0	1699	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	11%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.5			8.5						53.0	
Effective Green, g (s)		9.0			9.0						53.0	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		181			152						3177	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.06						0.40	
v/c Ratio		0.44			0.51						0.53	
Uniform Delay, d1		28.2			28.4						3.5	
Progression Factor		1.00			0.98						0.65	
Incremental Delay, d2		1.7			2.6						0.6	
Delay (s)		29.9			30.5						2.8	
Level of Service		C			C						A	
Approach Delay (s)		29.9			30.5			0.0			2.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
311: Broadway Street & W Wishkah Street #1011

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	145	35	24	68	0	0	0	0	8	1337	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1451			1471						4149	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1451			1325						4149	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	158	38	26	74	0	0	0	0	9	1453	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	181	0	0	100	0	0	0	0	0	1540	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	12%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		13.9			13.9						46.1	
Effective Green, g (s)		14.4			14.4						47.6	
Actuated g/C Ratio		0.21			0.21						0.68	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		298			273						2821	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.08						0.37	
v/c Ratio		0.61			0.37						0.55	
Uniform Delay, d1		25.2			23.9						5.7	
Progression Factor		1.00			0.96						0.23	
Incremental Delay, d2		3.5			0.7						0.7	
Delay (s)		28.7			23.8						2.0	
Level of Service		C			C						A	
Approach Delay (s)		28.7			23.8			0.0			2.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1352	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1448			1471						4162	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1448			1339						4162	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	82	22	17	49	0	0	0	0	21	1470	27
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	87	0	0	66	0	0	0	0	0	1517	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	12%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.4			8.4						53.1	
Effective Green, g (s)		8.9			8.9						53.1	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		184			170						3157	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.36	
v/c Ratio		0.47			0.39						0.48	
Uniform Delay, d1		28.4			28.1						3.2	
Progression Factor		1.00			0.49						0.21	
Incremental Delay, d2		1.9			1.4						0.4	
Delay (s)		30.3			15.3						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.3			15.3			0.0			1.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	104	15	57	84	0	0	0	0	131	1215	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1831			1826						4319	
Flt Permitted		1.00			0.85						1.00	
Satd. Flow (perm)		1831			1577						4319	
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)	0	109	16	60	88	0	0	0	0	138	1279	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	117	0	0	148	0	0	0	0	0	1447	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	12%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		536			462						2561	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.33	
v/c Ratio		0.22			0.32						0.56	
Uniform Delay, d1		18.7			19.3						8.7	
Progression Factor		1.00			0.99						0.82	
Incremental Delay, d2		0.9			1.7						0.8	
Delay (s)		19.6			20.9						8.0	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.9			0.0			8.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	28	163	0	0	0	0	21	513	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.94	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1327						2302	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1327						2302	1400
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)	0	0	0	30	173	0	0	0	0	22	546	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	88	152
Lane Group Flow (vph)	0	0	0	0	203	0	0	0	0	0	863	279
Heavy Vehicles (%)	2%	2%	2%	64%	5%	2%	2%	2%	2%	0%	31%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					16.2						44.8	44.8
Effective Green, g (s)					16.7						45.3	45.3
Actuated g/C Ratio					0.24						0.65	0.65
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					317						1490	906
v/s Ratio Prot												
v/s Ratio Perm					0.15						0.37	0.20
v/c Ratio					0.64						0.58	0.31
Uniform Delay, d1					24.0						7.0	5.4
Progression Factor					0.83						0.86	0.27
Incremental Delay, d2					4.2						1.4	0.8
Delay (s)					24.2						7.4	2.2
Level of Service					C						A	A
Approach Delay (s)		0.0			24.2			0.0			5.8	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1109	22	0	0	0	0	0	0	19	502	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3112									2274	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3112									2274	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1275	25	0	0	0	0	0	0	22	577	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	1299	0	0	0	0	0	0	0	0	595	0
Heavy Vehicles (%)	0%	4%	10%	2%	2%	2%	2%	2%	2%	0%	36%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		36.1									24.9	
Effective Green, g (s)		36.6									25.4	
Actuated g/C Ratio		0.52									0.36	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1627									825	
v/s Ratio Prot		c0.42										
v/s Ratio Perm											0.26	
v/c Ratio		0.80									0.72	
Uniform Delay, d1		13.7									19.2	
Progression Factor		0.82									1.44	
Incremental Delay, d2		3.6									2.6	
Delay (s)		14.8									30.4	
Level of Service		B									C	
Approach Delay (s)		14.8			0.0			0.0			30.4	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1461	561	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1077			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1077			
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)	124	692	0	0	0	0	0	1538	591	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	804	0	0	0	0	0	1538	554	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	20%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		18.8						42.7	42.7			
Effective Green, g (s)		18.8						43.2	43.2			
Actuated g/C Ratio		0.27						0.62	0.62			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1229						1892	665			
v/s Ratio Prot								0.50				
v/s Ratio Perm		0.18							c0.51			
v/c Ratio		0.65						0.81	0.83			
Uniform Delay, d1		22.7						10.3	10.6			
Progression Factor		0.87						1.78	1.91			
Incremental Delay, d2		1.2						3.2	9.6			
Delay (s)		21.0						21.5	29.8			
Level of Service		C						C	C			
Approach Delay (s)		21.0			0.0			23.8			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	717	411	76	1407	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.95			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3047			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3047			2943				
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)	0	0	0	0	739	424	78	1451	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1145	0	0	1523	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	16%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					24.0			37.0				
Effective Green, g (s)					24.5			37.5				
Actuated g/C Ratio					0.35			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1066			1577				
v/s Ratio Prot					c0.38							
v/s Ratio Perm								0.52				
v/c Ratio					1.07			0.97				
Uniform Delay, d1					22.8			15.6				
Progression Factor					1.00			0.75				
Incremental Delay, d2					49.7			11.1				
Delay (s)					72.4			22.8				
Level of Service					E			C				
Approach Delay (s)		0.0			72.4			22.8			0.0	
Approach LOS		A			E			C			A	

Intersection Summary			
HCM Average Control Delay	44.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1282	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2948									4180	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4180	
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)	0	290	45	0	0	0	0	0	0	394	1378	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	50	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1722	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	12%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.7									48.3	
Effective Green, g (s)		13.2									48.8	
Actuated g/C Ratio		0.19									0.70	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		556									2914	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.41	
v/c Ratio		0.56									0.59	
Uniform Delay, d1		25.8									5.5	
Progression Factor		1.00									0.76	
Incremental Delay, d2		1.3									0.7	
Delay (s)		27.1									4.9	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			4.9	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	488	296	0	0	0	0	0	1272	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.98						1.00	
Satd. Flow (prot)				1068	3014						4415	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1068	3014						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	530	322	0	0	0	0	0	1383	68
RTOR Reduction (vph)	0	0	0	23	23	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	0	0	258	548	0	0	0	0	0	1444	0
Heavy Vehicles (%)	2%	2%	2%	23%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				20.7	20.7						40.3	
Effective Green, g (s)				21.2	21.2						40.8	
Actuated g/C Ratio				0.30	0.30						0.58	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				323	913						2573	
v/s Ratio Prot				c0.24	0.18						c0.33	
v/s Ratio Perm												
v/c Ratio				0.80	0.60						0.56	
Uniform Delay, d1				22.4	20.8						9.1	
Progression Factor				0.96	1.04						1.00	
Incremental Delay, d2				1.3	0.1						0.9	
Delay (s)				22.8	21.8						9.9	
Level of Service				C	C						A	
Approach Delay (s)		0.0			22.1			0.0			9.9	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.7%	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)	11	1238	36	28	1027	2	349	8	18	17	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.98	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3311		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3125		1727	3311		1681	1672			1762	
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)	13	1456	42	33	1208	2	411	9	21	20	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1510	0	33	1210	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	9%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.3		5.4	80.7		17.3	17.3			5.0	
Effective Green, g (s)		72.3		5.4	81.7		18.3	18.3			6.0	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1915		79	2292		261	259			90	
v/s Ratio Prot				0.02	c0.37		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.53		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.8		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.56		1.00	1.00			1.00	
Incremental Delay, d2		3.4		2.8	0.7		22.4	19.9			1.7	
Delay (s)		20.5		59.5	5.6		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.5			7.0			69.6			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1575	102	53	1079	0	215	8	109	51	19	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3312		1727	3312		1665	1552			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3312		1727	3312		1665	1552			1751	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	1641	106	55	1124	0	224	8	114	53	20	25
RTOR Reduction (vph)	0	3	0	0	0	0	0	66	0	0	13	0
Lane Group Flow (vph)	26	1744	0	55	1124	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	9%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.3		7.6	66.3		14.5	14.5			11.6	
Effective Green, g (s)	6.6	66.3		7.6	67.3		15.5	15.5			12.6	
Actuated g/C Ratio	0.06	0.56		0.06	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1861		111	1889		219	204			187	
v/s Ratio Prot	0.02	c0.53		0.03	c0.34		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.27	0.94		0.50	0.60		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.9		53.3	16.5		49.9	47.6			49.5	
Progression Factor	0.78	0.60		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	8.6		2.5	1.4		21.0	2.2			2.1	
Delay (s)	42.3	22.9		55.9	17.9		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		23.2			19.6			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	963	3	516	903	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.93	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3176		3002	1491		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3176		3002	1491		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1189	4	637	1115	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1193	0	1195	557	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	16%	7%	7%	16%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	39.2		40.5	91.7		40.5
Effective Green, g (s)	41.2		42.5	91.7		42.5
Actuated g/C Ratio	0.45		0.46	1.00		0.46
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1427		1391	1491		1231
v/s Ratio Prot	c0.38		c0.40	0.37		0.14
v/s Ratio Perm						
v/c Ratio	0.84		0.86	0.37		0.31
Uniform Delay, d1	22.3		21.9	0.0		15.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	4.3		5.4	0.7		0.1
Delay (s)	26.6		27.4	0.7		15.5
Level of Service	C		C	A		B
Approach Delay (s)	26.6		18.9		15.5	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	91.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	20	0	0	8	19	635	1	3	340	55
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	21	0	0	8	20	668	1	3	358	58
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1117	1110	394	1096	1138	671	422			670		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1117	1110	394	1096	1138	671	422			670		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	178	205	655	182	197	459	1136			919		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	676	3	416
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	655	459	1136	1136	919	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.24
Queue Length 95th (ft)	2	1	1	1	0	0
Control Delay (s)	10.7	13.0	8.2	0.3	8.9	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.0	0.5		0.1	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	38.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	24	1	10	0	2	4	14	590	2	2	292	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	26	1	11	0	2	4	15	634	2	2	314	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1004	1001	330	995	1015	635	345			637		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1004	1001	330	995	1015	635	345			637		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	98	100	99	99	99			100		
cM capacity (veh/h)	216	240	714	218	236	480	1219			947		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	637	2	345
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	270	357	1219	1700	947	1700
Volume to Capacity	0.14	0.02	0.01	0.37	0.00	0.20
Queue Length 95th (ft)	12	1	1	0	0	0
Control Delay (s)	20.5	15.3	8.0	0.0	8.8	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	20.5	15.3	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	2	393	2	2	222	164
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	2	452	2	2	255	189
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	818	813	349	721	906	453	444			454		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	818	813	349	721	906	453	444			454		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	92	100	100	100	98	99	100			100		
cM capacity (veh/h)	289	314	698	329	266	589	1127			1117		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	454	2	444
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	189
cSH	314	351	1127	1700	1117	1700
Volume to Capacity	0.08	0.03	0.00	0.27	0.00	0.26
Queue Length 95th (ft)	7	2	0	0	0	0
Control Delay (s)	17.5	15.6	8.2	0.0	8.2	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	17.5	15.6	0.0		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
336: Simpson Avenue/N Park Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	370	30	0	0	0	1	82	1	2	227	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	389	32	0	0	0	1	86	1	2	239	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			421			539	405	405	449	421	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			421			539	405	405	449	421	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	84	100	100	54	99
cM capacity (veh/h)	1604			1149			288	536	648	455	524	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	421	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	532	539
Volume to Capacity	0.00	0.00	0.17	0.47
Queue Length 95th (ft)	0	0	15	63
Control Delay (s)	0.0	0.0	13.1	17.6
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.1	17.6
Approach LOS			B	C

Intersection Summary				
Average Delay		7.4		
Intersection Capacity Utilization		41.9%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	573	8	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	599	1	3	616	9	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1222	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1222	599
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		95	99
cM capacity (veh/h)			948		159	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	619	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	181
Volume to Capacity	0.35	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	26.1
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	26.1
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	550	0	2	528	10	70	1	162	8	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	598	0	2	574	11	76	1	176	9	2	8
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	586			601			1212	1208	603	1379	1203	581
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	586			601			1212	1208	603	1379	1203	581
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			51	99	65	89	99	98
cM capacity (veh/h)	974			959			154	182	500	76	178	505

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	587	253	18
Volume Left	9	2	76	9
Volume Right	0	11	176	8
cSH	974	959	298	130
Volume to Capacity	0.01	0.00	0.85	0.14
Queue Length 95th (ft)	1	0	184	12
Control Delay (s)	0.2	0.1	59.4	37.1
Lane LOS	A	A	F	E
Approach Delay (s)	0.2	0.1	59.4	37.1
Approach LOS			F	E

Intersection Summary			
Average Delay	10.9		
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	715	1	1	523	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	777	1	1	568	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	570			778			1352	1352	778	1352	1352	569
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570			778			1352	1352	778	1352	1352	569
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	99	100	100
cM capacity (veh/h)	988			825			127	150	397	127	150	522

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	779	571	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	988	825	192	204
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	24.0	22.9
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	24.0	22.9
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	630	34	186	468	11	6	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	692	37	204	514	12	7	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			730			1777	1749	713	1749	1762	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			730			1777	1749	713	1749	1762	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			65			84	96	99	59	98	94
cM capacity (veh/h)	1021			577			42	53	434	45	52	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	780	731	11	54
Volume Left	51	204	7	19
Volume Right	37	12	2	34
cSH	1021	577	54	108
Volume to Capacity	0.05	0.35	0.20	0.50
Queue Length 95th (ft)	4	40	17	56
Control Delay (s)	1.3	9.5	88.1	67.3
Lane LOS	A	A	F	F
Approach Delay (s)	1.3	9.5	88.1	67.3
Approach LOS			F	F

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	649	0	0	27	664
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	705	0	0	29	722
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			780	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			780	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			357	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	705	29	722
Volume Left	0	29	0
Volume Right	705	0	0
cSH	1700	1578	1700
Volume to Capacity	0.41	0.02	0.42
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	662	5	0	192	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	727	5	0	211	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1458	1458	1460	0
vC1, stage 1 conf vol			1458	1458	0	
vC2, stage 2 conf vol			0	0	1460	
vCu, unblocked vol	0		1458	1458	1460	0
tC, single (s)	4.2		7.1	7.3	6.5	6.2
tC, 2 stage (s)			6.1	6.3	5.5	
tF (s)	2.3		3.5	4.8	4.0	3.3
p0 queue free %	54		100	0	100	100
cM capacity (veh/h)	1597		80	47	95	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	485	248	211
Volume Left	485	242	0
Volume Right	0	5	0
cSH	1597	1597	47
Volume to Capacity	0.46	0.46	4.46
Queue Length 95th (ft)	61	61	Err
Control Delay (s)	9.1	9.0	Err
Lane LOS	A	A	F
Approach Delay (s)	9.1		Err
Approach LOS			F

Intersection Summary			
Average Delay	2242.0		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	21	3	0	0	169	7	12	830	20	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	3	0	0	192	8	14	943	23	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	603	993	0	984	982	483	0			966		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	603	993	0	984	982	483	0			966		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	99	100	100	22	99	99			100		
cM capacity (veh/h)	136	245	1091	201	247	532	1600			709		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	485	494
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	144	253	1600	1700
Volume to Capacity	0.19	0.79	0.01	0.29
Queue Length 95th (ft)	17	149	1	0
Control Delay (s)	35.6	57.6	0.3	0.0
Lane LOS	E	F	A	
Approach Delay (s)	35.6	57.6	0.1	
Approach LOS	E	F		

Intersection Summary				
Average Delay		10.5		
Intersection Capacity Utilization		46.6%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	6	0	0	16	2	5	844	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	6	0	0	17	2	5	879	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	460	895	2	897	892	442	0			884		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460	895	2	897	892	442	0			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	94	100	100			100		
cM capacity (veh/h)	464	281	1086	233	282	569	1593			761		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	445	445
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	357	299	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.26
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	15.5	17.8	0.1	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.5	17.8	0.1	
Approach LOS	C	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	31	797	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	105	9	36	927	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	600	1013	4	1011	1009	471	3			938		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600	1013	4	1011	1009	471	3			938		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	94	97	100	100	49	98	98			100		
cM capacity (veh/h)	200	204	1019	162	205	492	1592			724		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	499	470
Volume Left	12	0	36	0
Volume Right	0	9	0	7
cSH	202	215	1592	1700
Volume to Capacity	0.09	0.53	0.02	0.28
Queue Length 95th (ft)	8	69	2	0
Control Delay (s)	24.7	39.2	0.7	0.0
Lane LOS	C	E	A	
Approach Delay (s)	24.7	39.2	0.4	
Approach LOS	C	E		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	34	0	0	0	0	3	509	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	4	100	40	0	0	0	0	4	606	10
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.88	0.88	0.88	0.88	0.88		0.88					
vC, conflicting volume	641	628	311	328	633	7	618			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	308	293	0	0	299	7	283			7		
tC, single (s)	7.8	6.8	7.2	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.4	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	92	100	100			100		
cM capacity (veh/h)	481	510	912	853	527	1055	1116			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	140	307	312
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	559	724	1541	1700
Volume to Capacity	0.03	0.19	0.00	0.18
Queue Length 95th (ft)	2	18	0	0
Control Delay (s)	11.7	11.2	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.7	11.2	0.1	
Approach LOS	B	B		

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	570	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	613	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	650	642	315	340	648	4	626			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	642	315	340	648	4	626			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	347	392	687	575	389	1080	952			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	317	319
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	418	481	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.9	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.9	13.0	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		35.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	525	65	0	30	1	121	41	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	559	69	0	32	1	129	44	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	628			0			643	621	316	326	655	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628			0			643	621	316	326	655	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	77	89	100
cM capacity (veh/h)	950			1565			329	403	686	565	383	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	293	348	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	408	504
Volume to Capacity	0.01	0.20	0.08	0.34
Queue Length 95th (ft)	1	0	7	38
Control Delay (s)	0.4	0.0	14.6	15.8
Lane LOS	A		B	C
Approach Delay (s)	0.2		14.6	15.8
Approach LOS			B	C

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
362: S Division Street & W Heron Street

8/17/2009

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	176	0	176	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	191	0	191	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	240			29			165	174	145	261	261	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240			29			165	174	145	261	261	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	67	100	99	100	100
cM capacity (veh/h)	1326			1584			804	574	908	504	634	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	240	191	5
Volume Left	0	0	0	5
Volume Right	17	191	0	0
cSH	1326	1584	574	504
Volume to Capacity	0.00	0.00	0.33	0.01
Queue Length 95th (ft)	0	0	36	1
Control Delay (s)	0.0	0.0	14.4	12.2
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	14.4	12.2
Approach LOS			B	B

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	10	220	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	11	239	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	253	240	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	253	240	240			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	735	799	1338			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	240
Volume Left	1	1	0
Volume Right	1	0	1
cSH	766	1338	1700
Volume to Capacity	0.00	0.00	0.14
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.7	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.7	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	507	6	16	3	5	5	0	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	39	452	5	5	583	7	18	3	6	6	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	583			456			1172	1124	454	1133	1130	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			456			1172	1124	454	1133	1130	586
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			87	98	99	96	100	90
cM capacity (veh/h)	949			1115			141	189	588	163	187	494

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	590	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	949	1700	1115	1700	174	406
Volume to Capacity	0.04	0.27	0.00	0.35	0.16	0.13
Queue Length 95th (ft)	3	0	0	0	14	11
Control Delay (s)	9.0	0.0	8.2	0.0	29.5	15.2
Lane LOS	A		A		D	C
Approach Delay (s)	0.7		0.1		29.5	15.2
Approach LOS					D	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	446	110	8	14	38	52	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	361	11	16	485	120	9	15	41	57	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	604			372			1013	1040	366	1029	986	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	604			372			1013	1040	366	1029	986	545
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			95	93	94	69	97	95
cM capacity (veh/h)	936			1144			186	212	653	184	240	541

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	621	65	92
Volume Left	18	16	9	57
Volume Right	11	120	41	29
cSH	936	1144	359	237
Volume to Capacity	0.02	0.01	0.18	0.39
Queue Length 95th (ft)	2	1	16	44
Control Delay (s)	0.6	0.4	17.2	29.5
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	17.2	29.5
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	288	2	4	0	339	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	324	2	4	0	381	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381			326			356	737	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			326			356	737	325	406	357	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	89	95	100	100	100
cM capacity (veh/h)	1151			596			591	340	716	481	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	381	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	381	33
cSH	1151	1700	596	1700	453
Volume to Capacity	0.01	0.19	0.01	0.22	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.2	0.0	11.1	0.0	14.4
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.1		14.4
Approach LOS					B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/17/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	39	0	2	0	0	0	31	50	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	0	2	0	0	0	36	59	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		112	94	0	170	93	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		112	94	0	170	93	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	95	100	95	100
cM capacity (veh/h)	1554			1620		809	767	1076	711	777	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	48	0	95	40
Volume Left	46	0	0	2
Volume Right	2	0	59	0
cSH	1554	1700	932	773
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	332	4	15	450	31	10	7	24	32	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1770			1844			1759	1538		1747	
Flt Permitted		0.98			0.99			0.79	1.00		0.80	
Satd. Flow (perm)		1744			1824			1429	1538		1446	
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)	12	357	4	16	484	33	11	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	373	0	0	531	0	0	19	3	0	44	0
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		24.1			24.1			4.3	4.3		4.3	
Effective Green, g (s)		24.6			24.6			4.8	4.8		4.8	
Actuated g/C Ratio		0.66			0.66			0.13	0.13		0.13	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1147			1200			183	197		186	
v/s Ratio Prot												
v/s Ratio Perm		0.21			c0.29			0.01	0.00		c0.03	
v/c Ratio		0.32			0.44			0.10	0.02		0.24	
Uniform Delay, d1		2.8			3.1			14.4	14.2		14.7	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.3	0.0		0.7	
Delay (s)		3.0			3.4			14.7	14.3		15.3	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.0			3.4			14.4			15.3	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	37.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	2	262	19	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	203	17	2	298	22	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			220		506	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					302	
vCu, unblocked vol			220		506	203
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		97	100
cM capacity (veh/h)			1355		655	808

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	2	298	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1355	1700	672
Volume to Capacity	0.12	0.01	0.00	0.18	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.6
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.6
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	1207	11	0	0	0	0	55	24	16	81	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3343						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3343						3240			3066	
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)	128	1298	12	0	0	0	0	59	26	17	87	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1438	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2622						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.43									c0.03	
v/c Ratio		0.55						0.19			0.33	
Uniform Delay, d1		2.9						28.8			29.3	
Progression Factor		1.00						1.00			0.60	
Incremental Delay, d2		0.8						0.3			0.6	
Delay (s)		3.7						29.1			18.1	
Level of Service		A						C			B	
Approach Delay (s)		3.7			0.0			29.1			18.1	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1180	64	0	0	0	0	80	121	77	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3335						1711			1621	
Flt Permitted		1.00						1.00			0.73	
Satd. Flow (perm)		3335						1711			1204	
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)	18	1388	75	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	1477	0	0	0	0	0	211	0	0	187	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		30.4						14.8			14.8	
Effective Green, g (s)		30.4						14.8			14.8	
Actuated g/C Ratio		0.57						0.28			0.28	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1906						476			335	
v/s Ratio Prot								0.12				
v/s Ratio Perm		0.44									c0.16	
v/c Ratio		0.77						0.44			0.56	
Uniform Delay, d1		8.8						15.8			16.4	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.0						0.7			2.0	
Delay (s)		10.7						16.5			18.4	
Level of Service		B						B			B	
Approach Delay (s)		10.7			0.0			16.5			18.4	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	53.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1167	18	0	0	0	0	25	24	25	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3351						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3351						1597			1355	
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)	23	1203	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1244	0	0	0	0	0	29	0	0	55	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		30.8						4.5			4.5	
Effective Green, g (s)		31.3						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2368						180			153	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.37									c0.04	
v/c Ratio		0.53						0.16			0.36	
Uniform Delay, d1		3.0						17.8			18.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.4			1.4	
Delay (s)		3.2						18.2			19.6	
Level of Service		A						B			B	
Approach Delay (s)		3.2			0.0			18.2			19.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	44.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
418: Simpson Avenue/N Park Street #1012 & Ontario Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	1191	19	0	0	0	0	31	36	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	48	1228	20	0	0	0	0	32	37	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1247			1358	1335	624	764	1344	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1247			1358	1335	624	764	1344	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	78	91	79	69	100
cM capacity (veh/h)	1607			554			79	147	426	220	148	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	662	634	69	92
Volume Left	48	0	0	45
Volume Right	0	20	37	0
cSH	1607	1700	226	177
Volume to Capacity	0.03	0.37	0.31	0.52
Queue Length 95th (ft)	2	0	31	65
Control Delay (s)	0.9	0.0	27.7	45.4
Lane LOS	A		D	E
Approach Delay (s)	0.4		27.7	45.4
Approach LOS			D	E

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	859	12	0	0	0	0	415	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3323						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	934	13	0	0	0	0	451	9	0	0	0
RTOR Reduction (vph)	54	2	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	54	945	0	0	0	0	0	458	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	19.0	19.0						11.1				
Effective Green, g (s)	20.0	20.0						12.1				
Actuated g/C Ratio	0.50	0.50						0.30				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	874	1657						1054				
v/s Ratio Prot		c0.28						c0.13				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.57						0.43				
Uniform Delay, d1	5.2	7.0						11.3				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.5						0.3				
Delay (s)	5.2	7.5						11.5				
Level of Service	A	A						B				
Approach Delay (s)		7.3			0.0			11.5			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1076	70	0	0	0	0	27	171	41	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1575	1504		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.75	
Satd. Flow (perm)		2893	1300					1575	1504		1393	
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)	18	1157	75	0	0	0	0	29	184	44	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	47	47	0	0	0
Lane Group Flow (vph)	0	1175	66	0	0	0	0	61	58	0	78	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.2	53.2					7.8	7.8		7.8	
Effective Green, g (s)		53.7	53.7					8.3	8.3		8.3	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2219	997					187	178		165	
v/s Ratio Prot		c0.41						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.53	0.07					0.33	0.33		0.47	
Uniform Delay, d1		3.2	2.0					28.3	28.3		28.8	
Progression Factor		0.31	0.29					1.00	1.00		1.00	
Incremental Delay, d2		0.8	0.1					1.0	1.1		2.1	
Delay (s)		1.8	0.7					29.3	29.4		30.9	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.7			0.0			29.3			30.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1047	24	0	0	0	0	12	86	7	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2882						1314			1462	
Flt Permitted		1.00						1.00			0.87	
Satd. Flow (perm)		2882						1314			1291	
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)	24	1102	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	56	0	0	0	0
Lane Group Flow (vph)	0	1150	0	0	0	0	0	48	0	0	18	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.8						7.2			7.2	
Effective Green, g (s)		54.8						7.2			7.2	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2256						135			133	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.40									0.01	
v/c Ratio		0.51						0.36			0.14	
Uniform Delay, d1		2.7						29.2			28.6	
Progression Factor		0.39						1.00			1.00	
Incremental Delay, d2		0.6						1.6			0.5	
Delay (s)		1.7						30.9			29.0	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			30.9			29.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	906	16	0	0	0	0	0	29	289	216	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2887							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2887							1289	1681	1405	
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)	0	954	17	0	0	0	0	0	31	304	227	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	178	9	0
Lane Group Flow (vph)	0	969	0	0	0	0	0	0	4	83	261	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		28.6							9.5	18.4	18.4	
Effective Green, g (s)		29.1							10.0	18.9	18.9	
Actuated g/C Ratio		0.42							0.14	0.27	0.27	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1200							184	454	379	
v/s Ratio Prot		c0.34							c0.00	0.05	c0.19	
v/s Ratio Perm												
v/c Ratio		0.81							0.02	0.18	0.69	
Uniform Delay, d1		18.0							25.8	19.6	22.9	
Progression Factor		1.09							1.00	1.00	1.00	
Incremental Delay, d2		5.5							0.2	0.9	9.8	
Delay (s)		25.1							26.0	20.5	32.7	
Level of Service		C							C	C	C	
Approach Delay (s)		25.1			0.0			26.0			26.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	25.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	383	12	0	0	0	0	45	25	460	47	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2879						1418		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2879						1418		1681	1360	
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)	7	407	13	0	0	0	0	48	27	489	50	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	424	0	0	0	0	0	51	0	269	270	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		17.6						6.9		32.0	32.0	
Effective Green, g (s)		18.1						7.4		32.5	32.5	
Actuated g/C Ratio		0.26						0.11		0.46	0.46	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		744						150		780	631	
v/s Ratio Prot								c0.04		0.16	c0.20	
v/s Ratio Perm		0.15										
v/c Ratio		0.57						0.34		0.34	0.43	
Uniform Delay, d1		22.6						29.0		12.0	12.5	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.0						1.3		1.2	2.1	
Delay (s)		23.6						30.4		13.2	14.7	
Level of Service		C						C		B	B	
Approach Delay (s)		23.6			0.0			30.4			13.9	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	309	0	517	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1791		2111		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1791		2111		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	343	0	574	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	343	0	574	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		29.3		29.3		
Effective Green, g (s)		29.3		29.3		
Actuated g/C Ratio		0.74		0.74		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1332		1570		
v/s Ratio Prot		0.19		c0.27		
v/s Ratio Perm						
v/c Ratio		0.26		0.37		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.1		
Delay (s)		1.7		1.9		
Level of Service		A		A		
Approach Delay (s)	1.7			1.9	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	39.4	Sum of lost time (s)	10.1
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	894	22	18	163	0	0	90	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3490			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3490			3041			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	931	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	78	0
Lane Group Flow (vph)	0	0	0	0	967	0	0	189	0	0	269	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					49.1			11.9			11.9	
Effective Green, g (s)					49.6			12.4			12.4	
Actuated g/C Ratio					0.71			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2473			539			531	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.28			0.06				
v/c Ratio					0.39			0.35			0.51	
Uniform Delay, d1					4.1			25.3			26.0	
Progression Factor					1.47			1.04			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					6.5			26.6			26.8	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.5			26.6			26.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1196	19	13	381	0	0	51	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
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3353			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3353			1679			1710	1615
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)	0	0	0	15	1272	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	50
Lane Group Flow (vph)	0	0	0	0	1305	0	0	419	0	0	54	240
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2060			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.39			c0.25				0.15
v/c Ratio					0.63			0.92			0.12	0.55
Uniform Delay, d1					8.5			24.8			19.2	21.8
Progression Factor					0.61			1.00			1.00	1.00
Incremental Delay, d2					1.4			26.1			0.5	4.9
Delay (s)					6.6			50.8			19.7	26.7
Level of Service					A			D			B	C
Approach Delay (s)		0.0			6.6			50.8			25.6	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	70.0	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)	0	0	0	44	1120	92	32	68	0	0	211	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3567	1554		1815			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3567	1554		1551			1794	
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)	0	0	0	46	1179	97	34	72	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1225	54	0	106	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					29.0	29.0		14.7			14.7	
Effective Green, g (s)					29.0	29.0		14.7			14.7	
Actuated g/C Ratio					0.56	0.56		0.28			0.28	
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)					2001	872		441			510	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.34	0.04		0.07				
v/c Ratio					0.61	0.06		0.24			0.59	
Uniform Delay, d1					7.6	5.2		14.2			15.9	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.3			1.7	
Delay (s)					8.2	5.2		14.5			17.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			7.9			14.5			17.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	51.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1280	5	18	7	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.96			1.00	
Satd. Flow (prot)					3324			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3324			1676			1777	
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)	0	0	0	35	1362	5	19	7	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1402	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.9			1.3			1.3	
Effective Green, g (s)					30.4			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2514			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.42			c0.02				
v/c Ratio					0.56			0.35			0.29	
Uniform Delay, d1					2.1			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			2.8			2.0	
Delay (s)					2.3			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.3			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	42	1171	12	52	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	46	1287	13	57	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1300			0			758	1392	0	1393	1386	650
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1300			0			758	1392	0	1393	1386	650
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			77	90	100	100	86	97
cM capacity (veh/h)	529			1622			251	137	1084	93	140	417

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	690	657	71	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	215	188
Volume to Capacity	0.03	0.39	0.33	0.17
Queue Length 95th (ft)	2	0	35	15
Control Delay (s)	0.8	0.0	29.8	28.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		29.8	28.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1159	2	471	23	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3361		1618	1630				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1618	1630				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1302	2	529	26	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	158	158	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1304	0	117	122	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					26.4		10.0	10.0				0.6
Effective Green, g (s)					27.4		11.0	11.0				1.6
Actuated g/C Ratio					0.53		0.21	0.21				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1771		342	345				50
v/s Ratio Prot					c0.39							
v/s Ratio Perm							0.07	0.08				c0.00
v/c Ratio					0.74		0.34	0.35				0.00
Uniform Delay, d1					9.5		17.4	17.5				24.4
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.6		0.6	0.6				0.0
Delay (s)					11.1		18.0	18.1				24.5
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.1			18.1			24.5	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1222	184	0	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1286	194	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1286				1286	643
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1286				1286	643
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	78
cM capacity (veh/h)	535				153	411

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	643	643	194	89
Volume Left	0	0	0	0
Volume Right	0	0	194	89
cSH	1700	1700	1700	411
Volume to Capacity	0.38	0.38	0.11	0.22
Queue Length 95th (ft)	0	0	0	20
Control Delay (s)	0.0	0.0	0.0	16.2
Lane LOS				C
Approach Delay (s)	0.0			16.2
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	474	1066	0	0	8	98	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	489	1099	0	0	8	101	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			489	489	489	1588	1588	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			489	489	489	1588	1588	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	6	100	
cM capacity (veh/h)			480	579	490	108	413	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	855	733	8	101
Volume Left	0	0	8	0
Volume Right	366	733	0	0
cSH	1700	1700	490	108
Volume to Capacity	0.50	0.43	0.02	0.94
Queue Length 95th (ft)	0	0	1	144
Control Delay (s)	0.0	0.0	12.5	143.6
Lane LOS			B	F
Approach Delay (s)	0.0		133.7	
Approach LOS			F	

Intersection Summary			
Average Delay	8.6		
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	52	0	0	1186	0	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	0	0	1289	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	0	0	1289	0	508
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.3			46.7		69.0
Effective Green, g (s)	13.8			47.2		69.0
Actuated g/C Ratio	0.20			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	354			2398		2787
v/s Ratio Prot	0.03			c0.37		
v/s Ratio Perm						c0.18
v/c Ratio	0.16			0.54		0.18
Uniform Delay, d1	22.8			5.4		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.8		0.1
Delay (s)	22.9			6.3		0.1
Level of Service	C			A		A
Approach Delay (s)	22.9			6.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	609	577	467	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1694	1845	3467	
Flt Permitted			0.39	1.00	1.00	
Satd. Flow (perm)			695	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	634	601	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	634	601	518	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			49.8	54.3	25.2	
Effective Green, g (s)			50.8	54.8	25.7	
Actuated g/C Ratio			0.74	0.79	0.37	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			875	1465	1291	
v/s Ratio Prot			c0.26	0.33	0.15	
v/s Ratio Perm			c0.27			
v/c Ratio			0.72	0.41	0.40	
Uniform Delay, d1			4.3	2.2	16.0	
Progression Factor			0.45	0.08	1.00	
Incremental Delay, d2			2.2	0.7	0.1	
Delay (s)			4.2	0.9	16.1	
Level of Service			A	A	B	
Approach Delay (s)	0.0			2.6	16.1	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	947	218	0	0	0	21	0	646	143	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.97				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2449				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2449				
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)	1018	234	0	0	0	23	0	695	154	0	0	0
RTOR Reduction (vph)	355	91	0	0	0	22	0	19	0	0	0	0
Lane Group Flow (vph)	266	540	0	0	0	1	0	830	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	23%	17%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	24.2	24.2				2.5		31.3				
Effective Green, g (s)	24.7	24.7				1.5		31.8				
Actuated g/C Ratio	0.35	0.35				0.02		0.45				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	571	587				27		1113				
v/s Ratio Prot								c0.34				
v/s Ratio Perm	0.16	0.33				c0.00						
v/c Ratio	0.47	0.92				0.05		0.75				
Uniform Delay, d1	17.5	21.7				33.6		15.8				
Progression Factor	1.22	0.33				1.00		1.00				
Incremental Delay, d2	1.5	13.8				0.3		2.8				
Delay (s)	22.9	21.0				33.9		18.5				
Level of Service	C	C				C		B				
Approach Delay (s)		22.0			33.9			18.5			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	21	0	0	158	18	95	1527	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1631			4632				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1269			1631			4632				
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)	17	22	0	0	166	19	100	1607	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	179	0	0	1713	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	16%	5%	38%	10%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		13.1			13.1			47.9				
Effective Green, g (s)		13.6			13.6			48.4				
Actuated g/C Ratio		0.19			0.19			0.69				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		247			317			3203				
v/s Ratio Prot					c0.11							
v/s Ratio Perm		0.03						0.37				
v/c Ratio		0.16			0.57			0.53				
Uniform Delay, d1		23.4			25.5			5.3				
Progression Factor		1.06			1.00			0.99				
Incremental Delay, d2		0.3			2.3			0.4				
Delay (s)		25.0			27.8			5.7				
Level of Service		C			C			A				
Approach Delay (s)		25.0			27.8			5.7			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	64	1579	96	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1712	1504		4412				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4412				
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)	95	152	0	0	86	120	67	1662	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	18	0	8	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	78	0	1822	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	9%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.3			17.3	17.3		44.2				
Effective Green, g (s)		17.8			17.8	17.8		44.2				
Actuated g/C Ratio		0.25			0.25	0.25		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		316			435	382		2786				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.41				
v/c Ratio		0.78			0.22	0.20		0.65				
Uniform Delay, d1		24.3			20.6	20.5		8.1				
Progression Factor		0.94			1.00	1.00		2.07				
Incremental Delay, d2		11.1			0.3	0.3		1.1				
Delay (s)		34.0			20.9	20.8		17.9				
Level of Service		C			C	C		B				
Approach Delay (s)		34.0			20.8			17.9			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	19.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
307: S "K" Street & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	76	31	0	0	71	32	28	1575	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1785			4230				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4230				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	87	36	0	0	82	37	32	1810	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	14	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	105	0	0	1891	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	10%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.5			11.5			50.0				
Effective Green, g (s)		12.0			12.0			50.0				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		227			306			3021				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.09						0.45				
v/c Ratio		0.54			0.34			0.63				
Uniform Delay, d1		26.5			25.5			5.2				
Progression Factor		1.60			1.00			0.24				
Incremental Delay, d2		2.6			0.7			0.8				
Delay (s)		45.1			26.2			2.0				
Level of Service		D			C			A				
Approach Delay (s)		45.1			26.2			2.0			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	233	25	0	0	32	18	54	1749	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4275				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4275				
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)	248	27	0	0	34	19	57	1861	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	8	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	275	0	0	45	0	0	1938	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	9%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.4			20.4			39.6				
Effective Green, g (s)		20.9			20.9			41.1				
Actuated g/C Ratio		0.30			0.30			0.59				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		315			423			2510				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.45				
v/c Ratio		0.87			0.11			0.77				
Uniform Delay, d1		23.3			17.8			10.9				
Progression Factor		0.67			1.00			0.62				
Incremental Delay, d2		22.1			0.1			1.9				
Delay (s)		37.7			17.9			8.7				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.9			8.7			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1721	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1374			4277				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1374			4277				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	60	17	0	0	8	11	25	1956	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	9	0	0	1998	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	9%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		151			183			3220				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.47				
v/c Ratio		0.51			0.05			0.62				
Uniform Delay, d1		28.2			26.5			4.0				
Progression Factor		0.82			1.00			0.23				
Incremental Delay, d2		2.6			0.1			0.6				
Delay (s)		25.9			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		25.9			26.6			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
310: S "I" Street & W Wishkah Street #1011

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	56	37	34	35	0	0	0	0	17	1428	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4270	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1185						4270	
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)	0	62	41	38	39	0	0	0	0	19	1587	40
RTOR Reduction (vph)	0	25	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	78	0	0	77	0	0	0	0	0	1644	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	9%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.5			8.5						53.0	
Effective Green, g (s)		9.0			9.0						53.0	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		181			152						3233	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.06						0.38	
v/c Ratio		0.43			0.51						0.51	
Uniform Delay, d1		28.1			28.4						3.4	
Progression Factor		1.00			0.97						0.66	
Incremental Delay, d2		1.6			2.6						0.5	
Delay (s)		29.8			30.2						2.7	
Level of Service		C			C						A	
Approach Delay (s)		29.8			30.2			0.0			2.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	145	35	24	68	0	0	0	0	8	1287	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1451			1471						4219	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1451			1325						4219	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	158	38	26	74	0	0	0	0	9	1399	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	100	0	0	0	0	0	1485	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	10%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		13.9			13.9						46.1	
Effective Green, g (s)		14.4			14.4						47.6	
Actuated g/C Ratio		0.21			0.21						0.68	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		298			273						2869	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.08						0.35	
v/c Ratio		0.61			0.37						0.52	
Uniform Delay, d1		25.2			23.9						5.5	
Progression Factor		1.00			0.97						0.24	
Incremental Delay, d2		3.5			0.7						0.6	
Delay (s)		28.7			23.9						1.9	
Level of Service		C			C						A	
Approach Delay (s)		28.7			23.9			0.0			1.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1302	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1448			1471						4235	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1448			1339						4235	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	82	22	17	49	0	0	0	0	21	1415	27
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	87	0	0	66	0	0	0	0	0	1461	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	10%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.4			8.4						53.1	
Effective Green, g (s)		8.9			8.9						53.1	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		184			170						3213	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.35	
v/c Ratio		0.47			0.39						0.45	
Uniform Delay, d1		28.4			28.1						3.1	
Progression Factor		1.00			0.51						0.22	
Incremental Delay, d2		1.9			1.4						0.4	
Delay (s)		30.3			15.7						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.3			15.7			0.0			1.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	104	15	57	84	0	0	0	0	131	1165	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1831			1826						4388	
Flt Permitted		1.00			0.85						1.00	
Satd. Flow (perm)		1831			1577						4388	
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)	0	109	16	60	88	0	0	0	0	138	1226	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	148	0	0	0	0	0	1393	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	10%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		536			462						2601	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.32	
v/c Ratio		0.22			0.32						0.54	
Uniform Delay, d1		18.7			19.3						8.5	
Progression Factor		1.00			0.98						0.83	
Incremental Delay, d2		0.9			1.7						0.7	
Delay (s)		19.6			20.7						7.8	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.7			0.0			7.8	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	28	213	0	0	0	0	21	463	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.93	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1234						2350	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1234						2350	1400
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)	0	0	0	30	227	0	0	0	0	22	493	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	144	170
Lane Group Flow (vph)	0	0	0	0	257	0	0	0	0	0	770	245
Heavy Vehicles (%)	2%	2%	2%	64%	17%	2%	2%	2%	2%	0%	27%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					20.1						40.9	40.9
Effective Green, g (s)					20.6						41.4	41.4
Actuated g/C Ratio					0.29						0.59	0.59
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					363						1390	828
v/s Ratio Prot												
v/s Ratio Perm					0.21						0.33	0.18
v/c Ratio					0.71						0.55	0.30
Uniform Delay, d1					22.0						8.7	7.1
Progression Factor					0.90						0.65	0.11
Incremental Delay, d2					5.9						1.4	0.8
Delay (s)					25.8						7.0	1.6
Level of Service					C						A	A
Approach Delay (s)		0.0			25.8			0.0			5.3	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1109	72	0	0	0	0	0	0	19	452	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		0.99									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3000									2343	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3000									2343	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1275	83	0	0	0	0	0	0	22	520	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	1353	0	0	0	0	0	0	0	0	537	0
Heavy Vehicles (%)	0%	4%	58%	2%	2%	2%	2%	2%	2%	0%	32%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		37.6									23.4	
Effective Green, g (s)		38.1									23.9	
Actuated g/C Ratio		0.54									0.34	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1633									800	
v/s Ratio Prot		c0.45										
v/s Ratio Perm											0.23	
v/c Ratio		0.83									0.67	
Uniform Delay, d1		13.2									19.7	
Progression Factor		0.80									1.46	
Incremental Delay, d2		4.3									1.9	
Delay (s)		14.8									30.6	
Level of Service		B									C	
Approach Delay (s)		14.8			0.0			0.0			30.6	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1461	511	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1114			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1114			
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)	124	692	0	0	0	0	0	1538	538	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	804	0	0	0	0	0	1538	501	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	16%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		18.8						42.7	42.7			
Effective Green, g (s)		18.8						43.2	43.2			
Actuated g/C Ratio		0.27						0.62	0.62			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1229						1892	687			
v/s Ratio Prot								c0.50				
v/s Ratio Perm		0.18							0.45			
v/c Ratio		0.65						0.81	0.73			
Uniform Delay, d1		22.7						10.3	9.3			
Progression Factor		0.88						1.81	1.98			
Incremental Delay, d2		1.2						3.3	5.6			
Delay (s)		21.1						21.9	24.0			
Level of Service		C						C	C			
Approach Delay (s)		21.1			0.0			22.5			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	667	411	76	1407	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3113			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3113			2943				
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)	0	0	0	0	688	424	78	1451	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1094	0	0	1523	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	12%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					24.0			37.0				
Effective Green, g (s)					24.5			37.5				
Actuated g/C Ratio					0.35			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1090			1577				
v/s Ratio Prot					c0.35							
v/s Ratio Perm								0.52				
v/c Ratio					1.00			0.97				
Uniform Delay, d1					22.8			15.6				
Progression Factor					1.00			0.75				
Incremental Delay, d2					28.1			11.1				
Delay (s)					50.9			22.8				
Level of Service					D			C				
Approach Delay (s)		0.0			50.9			22.8			0.0	
Approach LOS		A			D			C			A	

Intersection Summary			
HCM Average Control Delay	34.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1232	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2948									4240	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4240	
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)	0	290	45	0	0	0	0	0	0	394	1325	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	51	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1668	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	10%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.7									48.3	
Effective Green, g (s)		13.2									48.8	
Actuated g/C Ratio		0.19									0.70	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		556									2956	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.39	
v/c Ratio		0.56									0.56	
Uniform Delay, d1		25.8									5.3	
Progression Factor		1.00									0.71	
Incremental Delay, d2		1.3									0.7	
Delay (s)		27.1									4.4	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			4.4	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	438	296	0	0	0	0	0	1272	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.98						1.00	
Satd. Flow (prot)				1114	3094						4415	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1114	3094						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	476	322	0	0	0	0	0	1383	68
RTOR Reduction (vph)	0	0	0	23	23	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	239	513	0	0	0	0	0	1445	0
Heavy Vehicles (%)	2%	2%	2%	18%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				19.7	19.7						41.3	
Effective Green, g (s)				20.2	20.2						41.8	
Actuated g/C Ratio				0.29	0.29						0.60	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				321	893						2636	
v/s Ratio Prot				c0.21	0.17						c0.33	
v/s Ratio Perm												
v/c Ratio				0.74	0.57						0.55	
Uniform Delay, d1				22.5	21.2						8.4	
Progression Factor				1.01	1.10						1.00	
Incremental Delay, d2				2.9	0.3						0.8	
Delay (s)				25.7	23.7						9.3	
Level of Service				C	C						A	
Approach Delay (s)		0.0			24.4			0.0			9.3	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1238	36	28	1027	2	349	8	18	17	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.98	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3311		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3125		1727	3311		1681	1672			1762	
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)	13	1456	42	33	1208	2	411	9	21	20	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1510	0	33	1210	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	9%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.3		5.4	80.7		17.3	17.3			5.0	
Effective Green, g (s)		72.3		5.4	81.7		18.3	18.3			6.0	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1915		79	2292		261	259			90	
v/s Ratio Prot				0.02	c0.37		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.53		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.8		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.56		1.00	1.00			1.00	
Incremental Delay, d2		3.4		2.8	0.7		22.4	19.9			1.7	
Delay (s)		20.5		59.5	5.6		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.5			7.0			69.6			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1575	102	53	1079	0	215	8	109	51	19	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3312		1727	3312		1665	1552			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3312		1727	3312		1665	1552			1751	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	1641	106	55	1124	0	224	8	114	53	20	25
RTOR Reduction (vph)	0	3	0	0	0	0	0	66	0	0	13	0
Lane Group Flow (vph)	26	1744	0	55	1124	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	9%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.3		7.6	66.3		14.5	14.5			11.6	
Effective Green, g (s)	6.6	66.3		7.6	67.3		15.5	15.5			12.6	
Actuated g/C Ratio	0.06	0.56		0.06	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1861		111	1889		219	204			187	
v/s Ratio Prot	0.02	c0.53		0.03	c0.34		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.27	0.94		0.50	0.60		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.9		53.3	16.5		49.9	47.6			49.5	
Progression Factor	0.78	0.60		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	8.6		2.5	1.4		21.0	2.2			2.1	
Delay (s)	42.3	22.9		55.9	17.9		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		23.2			19.6			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	913	3	516	853	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.93	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3260		3038	1517		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3260		3038	1517		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1127	4	637	1053	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1131	0	1153	537	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	13%	7%	7%	14%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	36.2		38.0	86.2		38.0
Effective Green, g (s)	38.2		40.0	86.2		40.0
Actuated g/C Ratio	0.44		0.46	1.00		0.46
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1445		1410	1517		1232
v/s Ratio Prot	c0.35		c0.38	0.35		0.14
v/s Ratio Perm						
v/c Ratio	0.78		0.82	0.35		0.31
Uniform Delay, d1	20.5		20.0	0.0		14.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	2.7		3.7	0.6		0.1
Delay (s)	23.2		23.7	0.6		14.5
Level of Service	C		C	A		B
Approach Delay (s)	23.2		16.4		14.5	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	86.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	20	0	0	8	19	635	1	3	340	55
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	21	0	0	8	20	668	1	3	358	58
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1117	1110	394	1096	1138	671	422			670		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1117	1110	394	1096	1138	671	422			670		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	178	205	655	182	197	459	1136			919		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	676	3	416
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	655	459	1136	1136	919	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.24
Queue Length 95th (ft)	2	1	1	1	0	0
Control Delay (s)	10.7	13.0	8.2	0.3	8.9	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.0	0.5		0.1	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	38.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	24	1	10	0	2	4	14	590	2	2	292	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	26	1	11	0	2	4	15	634	2	2	314	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1004	1001	330	995	1015	635	345			637		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1004	1001	330	995	1015	635	345			637		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	98	100	99	99	99			100		
cM capacity (veh/h)	216	240	714	218	236	480	1219			947		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	637	2	345
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	270	357	1219	1700	947	1700
Volume to Capacity	0.14	0.02	0.01	0.37	0.00	0.20
Queue Length 95th (ft)	12	1	1	0	0	0
Control Delay (s)	20.5	15.3	8.0	0.0	8.8	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	20.5	15.3	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	2	393	2	2	222	164
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	2	452	2	2	255	189
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	818	813	349	721	906	453	444			454		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	818	813	349	721	906	453	444			454		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	92	100	100	100	98	99	100			100		
cM capacity (veh/h)	289	314	698	329	266	589	1127			1117		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	454	2	444
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	189
cSH	314	351	1127	1700	1117	1700
Volume to Capacity	0.08	0.03	0.00	0.27	0.00	0.26
Queue Length 95th (ft)	7	2	0	0	0	0
Control Delay (s)	17.5	15.6	8.2	0.0	8.2	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	17.5	15.6	0.0		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
336: Simpson Avenue/N Park Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	370	30	0	0	0	1	82	1	2	227	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	389	32	0	0	0	1	86	1	2	239	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			421			539	405	405	449	421	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			421			539	405	405	449	421	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	84	100	100	54	99
cM capacity (veh/h)	1604			1149			288	536	648	455	524	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	421	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	532	539
Volume to Capacity	0.00	0.00	0.17	0.47
Queue Length 95th (ft)	0	0	15	63
Control Delay (s)	0.0	0.0	13.1	17.6
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.1	17.6
Approach LOS			B	C

Intersection Summary				
Average Delay		7.4		
Intersection Capacity Utilization		41.9%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	573	8	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	599	1	3	616	9	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1222	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1222	599
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		95	99
cM capacity (veh/h)			948		159	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	619	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	181
Volume to Capacity	0.35	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	26.1
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	26.1
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	550	0	2	528	10	70	1	162	8	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	598	0	2	574	11	76	1	176	9	2	8
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	586			601			1212	1208	603	1379	1203	581
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	586			601			1212	1208	603	1379	1203	581
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			51	99	65	89	99	98
cM capacity (veh/h)	974			959			154	182	500	76	178	505

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	587	253	18
Volume Left	9	2	76	9
Volume Right	0	11	176	8
cSH	974	959	298	130
Volume to Capacity	0.01	0.00	0.85	0.14
Queue Length 95th (ft)	1	0	184	12
Control Delay (s)	0.2	0.1	59.4	37.1
Lane LOS	A	A	F	E
Approach Delay (s)	0.2	0.1	59.4	37.1
Approach LOS			F	E

Intersection Summary			
Average Delay	10.9		
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	715	1	1	523	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	777	1	1	568	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	570			778			1352	1352	778	1352	1352	569
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570			778			1352	1352	778	1352	1352	569
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	99	100	100
cM capacity (veh/h)	988			825			127	150	397	127	150	522

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	779	571	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	988	825	192	204
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	24.0	22.9
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	24.0	22.9
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	630	34	186	468	11	6	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	692	37	204	514	12	7	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			730			1777	1749	713	1749	1762	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			730			1777	1749	713	1749	1762	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			65			84	96	99	59	98	94
cM capacity (veh/h)	1021			577			42	53	434	45	52	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	780	731	11	54
Volume Left	51	204	7	19
Volume Right	37	12	2	34
cSH	1021	577	54	108
Volume to Capacity	0.05	0.35	0.20	0.50
Queue Length 95th (ft)	4	40	17	56
Control Delay (s)	1.3	9.5	88.1	67.3
Lane LOS	A	A	F	F
Approach Delay (s)	1.3	9.5	88.1	67.3
Approach LOS			F	F

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	649	0	0	27	664
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	705	0	0	29	722
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			780	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			780	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			357	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	705	29	722
Volume Left	0	29	0
Volume Right	705	0	0
cSH	1700	1578	1700
Volume to Capacity	0.41	0.02	0.42
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	662	5	0	192	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	727	5	0	211	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1458	1458	1460	0
vC1, stage 1 conf vol			1458	1458	0	
vC2, stage 2 conf vol			0	0	1460	
vCu, unblocked vol	0		1458	1458	1460	0
tC, single (s)	4.2		7.1	7.3	6.5	6.2
tC, 2 stage (s)			6.1	6.3	5.5	
tF (s)	2.3		3.5	4.8	4.0	3.3
p0 queue free %	54		100	0	100	100
cM capacity (veh/h)	1597		80	47	95	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	485	248	211
Volume Left	485	242	0
Volume Right	0	5	0
cSH	1597	1597	47
Volume to Capacity	0.46	0.46	4.46
Queue Length 95th (ft)	61	61	Err
Control Delay (s)	9.1	9.0	Err
Lane LOS	A	A	F
Approach Delay (s)	9.1		Err
Approach LOS			F

Intersection Summary			
Average Delay	2242.0		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	21	3	0	0	169	7	12	830	20	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	3	0	0	192	8	14	943	23	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	603	993	0	984	982	483	0			966		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	603	993	0	984	982	483	0			966		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	99	100	100	22	99	99			100		
cM capacity (veh/h)	136	245	1091	201	247	532	1600			709		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	485	494
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	144	253	1600	1700
Volume to Capacity	0.19	0.79	0.01	0.29
Queue Length 95th (ft)	17	149	1	0
Control Delay (s)	35.6	57.6	0.3	0.0
Lane LOS	E	F	A	
Approach Delay (s)	35.6	57.6	0.1	
Approach LOS	E	F		

Intersection Summary				
Average Delay		10.5		
Intersection Capacity Utilization		46.6%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	6	0	0	16	2	5	844	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	6	0	0	17	2	5	879	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	460	895	2	897	892	442	0			884		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460	895	2	897	892	442	0			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	94	100	100			100		
cM capacity (veh/h)	464	281	1086	233	282	569	1593			761		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	445	445
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	357	299	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.26
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	15.5	17.8	0.1	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.5	17.8	0.1	
Approach LOS	C	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	31	797	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	105	9	36	927	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	600	1013	4	1011	1009	471	3			938		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600	1013	4	1011	1009	471	3			938		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	94	97	100	100	49	98	98			100		
cM capacity (veh/h)	200	204	1019	162	205	492	1592			724		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	499	470
Volume Left	12	0	36	0
Volume Right	0	9	0	7
cSH	202	215	1592	1700
Volume to Capacity	0.09	0.53	0.02	0.28
Queue Length 95th (ft)	8	69	2	0
Control Delay (s)	24.7	39.2	0.7	0.0
Lane LOS	C	E	A	
Approach Delay (s)	24.7	39.2	0.4	
Approach LOS	C	E		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
359: N Washington Street & W Wishkah Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	34	0	0	0	0	3	509	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	4	100	40	0	0	0	0	4	606	10
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	641	628	311	328	633	7	618			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	363	348	0	13	353	7	338			7		
tC, single (s)	7.8	6.8	7.2	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.4	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	92	100	100			100		
cM capacity (veh/h)	446	483	931	852	501	1055	1087			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	140	307	312
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	535	709	1541	1700
Volume to Capacity	0.03	0.20	0.00	0.18
Queue Length 95th (ft)	3	18	0	0
Control Delay (s)	12.0	11.3	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	11.3	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.4		
Intersection Capacity Utilization		36.2%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	570	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	613	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	650	642	315	340	648	4	626			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	642	315	340	648	4	626			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	347	392	687	575	389	1080	952			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	317	319
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	418	481	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.9	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.9	13.0	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		35.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	525	65	0	30	1	121	41	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	559	69	0	32	1	129	44	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	628			0			643	621	316	326	655	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628			0			643	621	316	326	655	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	77	89	100
cM capacity (veh/h)	950			1565			329	403	686	565	383	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	293	348	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	408	504
Volume to Capacity	0.01	0.20	0.08	0.34
Queue Length 95th (ft)	1	0	7	38
Control Delay (s)	0.4	0.0	14.6	15.8
Lane LOS	A		B	C
Approach Delay (s)	0.2		14.6	15.8
Approach LOS			B	C

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
362: S Division Street & W Heron Street

8/17/2009

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	176	0	176	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	191	0	191	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	240			29			165	174	145	261	261	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240			29			165	174	145	261	261	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	67	100	99	100	100
cM capacity (veh/h)	1326			1584			804	574	908	504	634	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	240	191	5
Volume Left	0	0	0	5
Volume Right	17	191	0	0
cSH	1326	1584	574	504
Volume to Capacity	0.00	0.00	0.33	0.01
Queue Length 95th (ft)	0	0	36	1
Control Delay (s)	0.0	0.0	14.4	12.2
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	14.4	12.2
Approach LOS			B	B

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	10	220	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	11	239	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	253	240	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	253	240	240			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	735	799	1338			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	240
Volume Left	1	1	0
Volume Right	1	0	1
cSH	766	1338	1700
Volume to Capacity	0.00	0.00	0.14
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.7	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.7	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	507	6	16	3	5	5	0	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	39	452	5	5	583	7	18	3	6	6	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	583			456			1172	1124	454	1133	1130	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			456			1172	1124	454	1133	1130	586
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			87	98	99	96	100	90
cM capacity (veh/h)	949			1115			141	189	588	163	187	494

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	590	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	949	1700	1115	1700	174	406
Volume to Capacity	0.04	0.27	0.00	0.35	0.16	0.13
Queue Length 95th (ft)	3	0	0	0	14	11
Control Delay (s)	9.0	0.0	8.2	0.0	29.5	15.2
Lane LOS	A		A		D	C
Approach Delay (s)	0.7		0.1		29.5	15.2
Approach LOS					D	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	446	110	8	14	38	52	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	361	11	16	485	120	9	15	41	57	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	604			372			1013	1040	366	1029	986	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	604			372			1013	1040	366	1029	986	545
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			95	93	94	69	97	95
cM capacity (veh/h)	936			1144			186	212	653	184	240	541

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	621	65	92
Volume Left	18	16	9	57
Volume Right	11	120	41	29
cSH	936	1144	359	237
Volume to Capacity	0.02	0.01	0.18	0.39
Queue Length 95th (ft)	2	1	16	44
Control Delay (s)	0.6	0.4	17.2	29.5
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	17.2	29.5
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	288	2	4	0	339	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	324	2	4	0	381	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381			326			356	737	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			326			356	737	325	406	357	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	89	95	100	100	100
cM capacity (veh/h)	1151			596			591	340	716	481	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	381	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	381	33
cSH	1151	1700	596	1700	453
Volume to Capacity	0.01	0.19	0.01	0.22	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.2	0.0	11.1	0.0	14.4
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.1		14.4
Approach LOS					B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/17/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	39	0	2	0	0	0	31	50	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	0	2	0	0	0	36	59	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		112	94	0	170	93	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		112	94	0	170	93	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	95	100	95	100
cM capacity (veh/h)	1554			1620		809	767	1076	711	777	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	48	0	95	40
Volume Left	46	0	0	2
Volume Right	2	0	59	0
cSH	1554	1700	932	773
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	382	4	15	500	31	10	7	24	32	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1666			1767			1759	1538		1747	
Flt Permitted		0.98			0.99			0.81	1.00		0.80	
Satd. Flow (perm)		1643			1747			1461	1538		1446	
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)	12	411	4	16	538	33	11	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	22	0	12	0
Lane Group Flow (vph)	0	427	0	0	586	0	0	19	4	0	44	0
Heavy Vehicles (%)	7%	14%	7%	2%	7%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		26.2			26.2			5.7	5.7		5.7	
Effective Green, g (s)		26.7			26.7			6.2	6.2		6.2	
Actuated g/C Ratio		0.65			0.65			0.15	0.15		0.15	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1073			1140			221	233		219	
v/s Ratio Prot												
v/s Ratio Perm		0.26			c0.34			0.01	0.00		c0.03	
v/c Ratio		0.40			0.51			0.09	0.02		0.20	
Uniform Delay, d1		3.3			3.7			14.9	14.8		15.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.4			0.2	0.0		0.5	
Delay (s)		3.6			4.1			15.1	14.8		15.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.6			4.1			14.9			15.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	40.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	52	262	19	53
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	203	17	59	298	22	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			220		619	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					416	
vCu, unblocked vol			220		619	203
tC, single (s)			5.0		6.5	7.1
tC, 2 stage (s)					5.5	
tF (s)			3.0		3.6	4.1
p0 queue free %			94		96	91
cM capacity (veh/h)			955		560	656

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	59	298	82
Volume Left	0	0	59	0	22
Volume Right	0	17	0	0	60
cSH	1700	1700	955	1700	627
Volume to Capacity	0.12	0.01	0.06	0.18	0.13
Queue Length 95th (ft)	0	0	5	0	11
Control Delay (s)	0.0	0.0	9.0	0.0	11.6
Lane LOS			A		B
Approach Delay (s)	0.0		1.5		11.6
Approach LOS					B

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	1257	11	0	0	0	0	55	24	16	81	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3285						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3285						3240			3066	
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)	128	1352	12	0	0	0	0	59	26	17	87	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1492	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2576						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.45									c0.03	
v/c Ratio		0.58						0.19			0.33	
Uniform Delay, d1		3.0						28.8			29.3	
Progression Factor		1.00						1.00			0.58	
Incremental Delay, d2		1.0						0.3			0.6	
Delay (s)		3.9						29.1			17.5	
Level of Service		A						C			B	
Approach Delay (s)		3.9			0.0			29.1			17.5	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1230	64	0	0	0	0	80	121	77	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3275						1711			1621	
Flt Permitted		1.00						1.00			0.69	
Satd. Flow (perm)		3275						1711			1149	
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)	18	1447	75	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1536	0	0	0	0	0	214	0	0	187	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		33.8						15.1			15.1	
Effective Green, g (s)		33.8						15.1			15.1	
Actuated g/C Ratio		0.59						0.27			0.27	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1945						454			305	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.47									c0.16	
v/c Ratio		0.79						0.47			0.61	
Uniform Delay, d1		8.8						17.5			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.1						0.8			3.6	
Delay (s)		11.0						18.3			22.0	
Level of Service		B						B			C	
Approach Delay (s)		11.0			0.0			18.3			22.0	
Approach LOS		B			A			B			C	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1217	18	0	0	0	0	25	24	25	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3289						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3289						1597			1355	
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)	23	1255	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1296	0	0	0	0	0	29	0	0	55	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		32.0						4.5			4.5	
Effective Green, g (s)		32.5						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2349						175			149	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.39									c0.04	
v/c Ratio		0.55						0.16			0.37	
Uniform Delay, d1		3.1						18.4			18.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.3						0.4			1.5	
Delay (s)		3.3						18.8			20.3	
Level of Service		A						B			C	
Approach Delay (s)		3.3			0.0			18.8			20.3	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	45.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	1241	19	0	0	0	0	31	36	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	48	1279	20	0	0	0	0	32	37	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1299			1409	1386	649	790	1396	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1299			1409	1386	649	790	1396	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	77	91	78	66	100
cM capacity (veh/h)	1607			529			71	136	410	207	138	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	688	659	69	92
Volume Left	48	0	0	45
Volume Right	0	20	37	0
cSH	1607	1700	213	165
Volume to Capacity	0.03	0.39	0.32	0.55
Queue Length 95th (ft)	2	0	34	71
Control Delay (s)	0.8	0.0	29.9	50.9
Lane LOS	A		D	F
Approach Delay (s)	0.4		29.9	50.9
Approach LOS			D	F

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	909	12	0	0	0	0	415	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3230						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3230						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	988	13	0	0	0	0	451	9	0	0	0
RTOR Reduction (vph)	52	1	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	56	1000	0	0	0	0	0	458	0	0	0	0
Heavy Vehicles (%)	3%	6%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	20.6	20.6						11.4				
Effective Green, g (s)	21.6	21.6						12.4				
Actuated g/C Ratio	0.51	0.51						0.30				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	901	1661						1032				
v/s Ratio Prot		c0.31						c0.13				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.60						0.44				
Uniform Delay, d1	5.1	7.2						12.0				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.6						0.3				
Delay (s)	5.1	7.8						12.3				
Level of Service	A	A						B				
Approach Delay (s)		7.5			0.0			12.3			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1126	70	0	0	0	0	27	171	41	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2840	1300					1575	1504		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.75	
Satd. Flow (perm)		2840	1300					1575	1504		1395	
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)	18	1211	75	0	0	0	0	29	184	44	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	40	40	0	0	0
Lane Group Flow (vph)	0	1229	66	0	0	0	0	68	65	0	78	0
Heavy Vehicles (%)	6%	8%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.1	53.1					7.9	7.9		7.9	
Effective Green, g (s)		53.6	53.6					8.4	8.4		8.4	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2175	995					189	180		167	
v/s Ratio Prot		c0.43						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.57	0.07					0.36	0.36		0.47	
Uniform Delay, d1		3.4	2.0					28.3	28.3		28.7	
Progression Factor		0.31	0.34					1.00	1.00		1.00	
Incremental Delay, d2		1.0	0.1					1.2	1.2		2.1	
Delay (s)		2.0	0.8					29.5	29.5		30.8	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.9			0.0			29.5			30.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1097	24	0	0	0	0	12	86	7	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2832						1314			1462	
Flt Permitted		1.00						1.00			0.87	
Satd. Flow (perm)		2832						1314			1297	
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)	24	1155	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	48	0	0	0	0
Lane Group Flow (vph)	0	1203	0	0	0	0	0	56	0	0	18	0
Heavy Vehicles (%)	6%	8%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.5						7.5			7.5	
Effective Green, g (s)		54.5						7.5			7.5	
Actuated g/C Ratio		0.78						0.11			0.11	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2205						141			139	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.42									0.01	
v/c Ratio		0.55						0.40			0.13	
Uniform Delay, d1		3.0						29.1			28.3	
Progression Factor		0.36						1.00			1.00	
Incremental Delay, d2		0.6						1.8			0.4	
Delay (s)		1.7						31.0			28.7	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			31.0			28.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	956	16	0	0	0	0	0	29	289	216	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2809							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2809							1289	1681	1405	
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)	0	1006	17	0	0	0	0	0	31	304	227	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	175	10	0
Lane Group Flow (vph)	0	1021	0	0	0	0	0	0	4	86	260	0
Heavy Vehicles (%)	2%	9%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		29.1							9.5	17.9	17.9	
Effective Green, g (s)		29.6							10.0	18.4	18.4	
Actuated g/C Ratio		0.42							0.14	0.26	0.26	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1188							184	442	369	
v/s Ratio Prot		c0.36							c0.00	0.05	c0.19	
v/s Ratio Perm												
v/c Ratio		0.86							0.02	0.20	0.71	
Uniform Delay, d1		18.3							25.8	20.0	23.3	
Progression Factor		1.10							1.00	1.00	1.00	
Incremental Delay, d2		7.5							0.2	1.0	10.8	
Delay (s)		27.6							26.0	21.0	34.2	
Level of Service		C							C	C	C	
Approach Delay (s)		27.6			0.0			26.0			27.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	433	12	0	0	0	0	45	25	460	47	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2733						1418		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2733						1418		1681	1360	
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)	7	461	13	0	0	0	0	48	27	489	50	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	479	0	0	0	0	0	51	0	269	270	0
Heavy Vehicles (%)	6%	12%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		19.9						6.9		29.7	29.7	
Effective Green, g (s)		20.4						7.4		30.2	30.2	
Actuated g/C Ratio		0.29						0.11		0.43	0.43	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		796						150		725	587	
v/s Ratio Prot								c0.04		0.16	c0.20	
v/s Ratio Perm		0.18										
v/c Ratio		0.60						0.34		0.37	0.46	
Uniform Delay, d1		21.3						29.0		13.5	14.1	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.3						1.3		1.5	2.6	
Delay (s)		22.6						30.4		14.9	16.7	
Level of Service		C						C		B	B	
Approach Delay (s)		22.6			0.0			30.4			15.8	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	359	0	567	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1678		2031		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1678		2031		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	399	0	630	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	399	0	630	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	11%	2%	6%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		30.5		30.5		
Effective Green, g (s)		30.5		30.5		
Actuated g/C Ratio		0.75		0.75		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1264		1530		
v/s Ratio Prot		0.24		c0.31		
v/s Ratio Perm						
v/c Ratio		0.32		0.41		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.2		
Delay (s)		1.8		2.0		
Level of Service		A		A		
Approach Delay (s)	1.8			2.0	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	40.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
450: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Market Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	944	22	18	163	0	0	90	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3395			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3395			3044			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	983	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	68	0
Lane Group Flow (vph)	0	0	0	0	1019	0	0	189	0	0	279	0
Heavy Vehicles (%)	2%	2%	2%	3%	6%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					48.8			12.2			12.2	
Effective Green, g (s)					49.3			12.7			12.7	
Actuated g/C Ratio					0.70			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2391			552			543	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.30			0.06				
v/c Ratio					0.43			0.34			0.51	
Uniform Delay, d1					4.4			25.0			25.9	
Progression Factor					1.39			1.03			1.00	
Incremental Delay, d2					0.5			0.3			0.8	
Delay (s)					6.6			26.2			26.7	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.6			26.2			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1246	19	13	381	0	0	51	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
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3290			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3290			1679			1710	1615
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)	0	0	0	15	1326	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	44
Lane Group Flow (vph)	0	0	0	0	1359	0	0	419	0	0	54	246
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2021			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.41			c0.25				0.15
v/c Ratio					0.67			0.92			0.12	0.56
Uniform Delay, d1					8.9			24.8			19.2	21.9
Progression Factor					0.65			1.00			1.00	1.00
Incremental Delay, d2					1.7			26.1			0.5	5.1
Delay (s)					7.5			50.8			19.7	27.0
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.5			50.8			25.9	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1170	92	32	68	0	0	211	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3500	1554		1815			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3500	1554		1550			1794	
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)	0	0	0	46	1232	97	34	72	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1278	55	0	106	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	3%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					30.6	30.6		15.0			15.0	
Effective Green, g (s)					30.6	30.6		15.0			15.0	
Actuated g/C Ratio					0.57	0.57		0.28			0.28	
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)					1998	887		434			502	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.37	0.04		0.07				
v/c Ratio					0.64	0.06		0.24			0.60	
Uniform Delay, d1					7.8	5.1		14.9			16.7	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.7	0.0		0.3			1.9	
Delay (s)					8.5	5.1		15.2			18.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.2			15.2			18.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1330	5	18	7	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.96			1.00	
Satd. Flow (prot)					3262			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3262			1676			1777	
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)	0	0	0	35	1415	5	19	7	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1455	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	5%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.9			1.3			1.3	
Effective Green, g (s)					30.4			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2467			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.45			c0.02				
v/c Ratio					0.59			0.35			0.29	
Uniform Delay, d1					2.2			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.4			2.8			2.0	
Delay (s)					2.5			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.5			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	42	1221	12	52	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	46	1342	13	57	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1355			0			785	1447	0	1448	1441	677
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1355			0			785	1447	0	1448	1441	677
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			76	89	100	100	85	97
cM capacity (veh/h)	504			1622			237	127	1084	84	130	400

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	717	684	71	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	202	175
Volume to Capacity	0.03	0.40	0.35	0.18
Queue Length 95th (ft)	2	0	38	16
Control Delay (s)	0.8	0.0	32.3	30.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		32.3	30.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1209	2	471	23	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3297		1618	1630				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3297		1618	1630				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1358	2	529	26	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	156	156	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1360	0	119	124	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.3		10.1	10.1				0.7
Effective Green, g (s)					29.3		11.1	11.1				1.7
Actuated g/C Ratio					0.54		0.21	0.21				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1786		332	334				51
v/s Ratio Prot					c0.41							
v/s Ratio Perm							0.07	0.08				c0.00
v/c Ratio					0.76		0.36	0.37				0.00
Uniform Delay, d1					9.7		18.4	18.5				25.4
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					2.0		0.7	0.7				0.0
Delay (s)					11.6		19.1	19.2				25.4
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.6			19.2			25.4	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1272	184	0	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1339	194	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1339				1339	669
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1339				1339	669
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	77
cM capacity (veh/h)	511				142	395

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	669	669	194	89
Volume Left	0	0	0	0
Volume Right	0	0	194	89
cSH	1700	1700	1700	395
Volume to Capacity	0.39	0.39	0.11	0.23
Queue Length 95th (ft)	0	0	0	21
Control Delay (s)	0.0	0.0	0.0	16.8
Lane LOS				C
Approach Delay (s)	0.0			16.8
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	474	1116	0	0	8	98	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	489	1151	0	0	8	101	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			489	489	489	1639	1639	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			489	489	489	1639	1639	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	0	100	
cM capacity (veh/h)			480	579	490	100	395	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	872	767	8	101
Volume Left	0	0	8	0
Volume Right	384	767	0	0
cSH	1700	1700	490	100
Volume to Capacity	0.51	0.45	0.02	1.01
Queue Length 95th (ft)	0	0	1	155
Control Delay (s)	0.0	0.0	12.5	170.1
Lane LOS			B	F
Approach Delay (s)	0.0		158.2	
Approach LOS			F	

Intersection Summary			
Average Delay	9.9		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	52	0	0	1236	0	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3438		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3438		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	0	0	1343	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	0	0	1343	0	508
Heavy Vehicles (%)	2%	2%	3%	5%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.4			48.1		70.5
Effective Green, g (s)	13.9			48.6		70.5
Actuated g/C Ratio	0.20			0.69		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	349			2370		2787
v/s Ratio Prot	0.03			c0.39		
v/s Ratio Perm						c0.18
v/c Ratio	0.16			0.57		0.18
Uniform Delay, d1	23.5			5.6		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	23.6			6.5		0.1
Level of Service	C			A		A
Approach Delay (s)	23.6			6.5	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	4.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	659	577	467	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1631	1845	3467	
Flt Permitted			0.38	1.00	1.00	
Satd. Flow (perm)			658	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	686	601	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	686	601	518	0
Heavy Vehicles (%)	2%	2%	7%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			51.2	55.7	25.0	
Effective Green, g (s)			52.2	56.2	25.5	
Actuated g/C Ratio			0.74	0.80	0.36	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			856	1471	1254	
v/s Ratio Prot			c0.30	0.33	0.15	
v/s Ratio Perm			c0.29			
v/c Ratio			0.80	0.41	0.41	
Uniform Delay, d1			5.5	2.2	16.9	
Progression Factor			0.63	0.08	1.00	
Incremental Delay, d2			4.5	0.7	0.1	
Delay (s)			7.9	0.8	17.0	
Level of Service			A	A	B	
Approach Delay (s)	0.0			4.6	17.0	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	18.3
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	947	218	0	0	0	21	0	482	307	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.94				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2315				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2315				
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)	1018	234	0	0	0	23	0	518	330	0	0	0
RTOR Reduction (vph)	362	91	0	0	0	23	0	100	0	0	0	0
Lane Group Flow (vph)	259	540	0	0	0	0	0	748	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	10%	48%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	24.2	24.2				2.3		31.5				
Effective Green, g (s)	24.7	24.7				1.3		32.0				
Actuated g/C Ratio	0.35	0.35				0.02		0.46				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	571	587				24		1058				
v/s Ratio Prot								c0.32				
v/s Ratio Perm	0.16	0.33				c0.00						
v/c Ratio	0.45	0.92				0.02		0.71				
Uniform Delay, d1	17.4	21.7				33.7		15.2				
Progression Factor	1.32	0.31				1.00		1.00				
Incremental Delay, d2	1.5	14.7				0.1		2.2				
Delay (s)	24.6	21.3				33.8		17.4				
Level of Service	C	C				C		B				
Approach Delay (s)		22.9			33.8			17.4			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	21	0	0	322	18	45	1413	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1320			4887				
Flt Permitted		0.84			1.00			1.00				
Satd. Flow (perm)		1257			1320			4887				
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)	17	22	0	0	339	19	47	1487	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	355	0	0	1540	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	45%	5%	4%	6%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		23.8			23.8			37.2				
Effective Green, g (s)		24.3			24.3			37.7				
Actuated g/C Ratio		0.35			0.35			0.54				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		436			458			2632				
v/s Ratio Prot					c0.27							
v/s Ratio Perm		0.03						0.32				
v/c Ratio		0.09			0.77			0.58				
Uniform Delay, d1		15.4			20.4			10.9				
Progression Factor		0.69			1.00			0.80				
Incremental Delay, d2		0.1			8.0			0.6				
Delay (s)		10.7			28.4			9.4				
Level of Service		B			C			A				
Approach Delay (s)		10.7			28.4			9.4			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	64	1465	96	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1712	1504		4522				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4522				
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)	95	152	0	0	86	120	67	1542	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	24	0	9	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	72	0	1701	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	6%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.3			17.3	17.3		44.2				
Effective Green, g (s)		17.8			17.8	17.8		44.2				
Actuated g/C Ratio		0.25			0.25	0.25		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		316			435	382		2855				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.38				
v/c Ratio		0.78			0.22	0.19		0.60				
Uniform Delay, d1		24.3			20.6	20.4		7.6				
Progression Factor		0.96			1.00	1.00		1.83				
Incremental Delay, d2		11.3			0.3	0.2		0.8				
Delay (s)		34.6			20.9	20.7		14.8				
Level of Service		C			C	C		B				
Approach Delay (s)		34.6			20.8			14.8			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	17.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	76	31	0	0	71	32	28	1461	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1785			4381				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4381				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	87	36	0	0	82	37	32	1679	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	19	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	100	0	0	1760	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.5			11.5			50.0				
Effective Green, g (s)		12.0			12.0			50.0				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		227			306			3129				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.09						0.40				
v/c Ratio		0.54			0.33			0.56				
Uniform Delay, d1		26.5			25.5			4.8				
Progression Factor		1.61			1.00			0.26				
Incremental Delay, d2		2.6			0.6			0.6				
Delay (s)		45.1			26.1			1.8				
Level of Service		D			C			A				
Approach Delay (s)		45.1			26.1			1.8			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	233	25	0	0	32	18	54	1635	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4390				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4390				
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)	248	27	0	0	34	19	57	1739	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	275	0	0	42	0	0	1816	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.4			20.4			39.6				
Effective Green, g (s)		20.9			20.9			41.1				
Actuated g/C Ratio		0.30			0.30			0.59				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		315			423			2578				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.41				
v/c Ratio		0.87			0.10			0.70				
Uniform Delay, d1		23.3			17.7			10.2				
Progression Factor		0.67			1.00			0.57				
Incremental Delay, d2		22.1			0.1			1.4				
Delay (s)		37.7			17.8			7.2				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.8			7.2			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1607	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1374			4395				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1374			4395				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	60	17	0	0	8	11	25	1826	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	9	0	0	1868	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		151			183			3309				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.43				
v/c Ratio		0.51			0.05			0.56				
Uniform Delay, d1		28.2			26.5			3.7				
Progression Factor		0.82			1.00			0.26				
Incremental Delay, d2		2.6			0.1			0.5				
Delay (s)		25.9			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		25.9			26.6			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	56	37	34	35	0	0	0	0	17	1314	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4426	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1185						4426	
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)	0	62	41	38	39	0	0	0	0	19	1460	40
RTOR Reduction (vph)	0	35	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	68	0	0	77	0	0	0	0	0	1517	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.5			8.5						53.0	
Effective Green, g (s)		9.0			9.0						53.0	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		181			152						3351	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.06						0.34	
v/c Ratio		0.38			0.51						0.45	
Uniform Delay, d1		27.9			28.4						3.1	
Progression Factor		1.00			0.94						0.69	
Incremental Delay, d2		1.3			2.6						0.4	
Delay (s)		29.2			29.4						2.6	
Level of Service		C			C						A	
Approach Delay (s)		29.2			29.4			0.0			2.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
311: Broadway Street & W Wishkah Street #1011

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	145	35	24	68	0	0	0	0	8	1173	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1451			1471						4404	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1451			1325						4404	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	158	38	26	74	0	0	0	0	9	1275	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	100	0	0	0	0	0	1361	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		13.9			13.9						46.1	
Effective Green, g (s)		14.4			14.4						47.6	
Actuated g/C Ratio		0.21			0.21						0.68	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		298			273						2995	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.08						0.31	
v/c Ratio		0.61			0.37						0.45	
Uniform Delay, d1		25.2			23.9						5.2	
Progression Factor		1.00			0.95						0.26	
Incremental Delay, d2		3.5			0.8						0.5	
Delay (s)		28.7			23.5						1.8	
Level of Service		C			C						A	
Approach Delay (s)		28.7			23.5			0.0			1.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1188	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1448			1471						4429	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1448			1339						4429	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	82	22	17	49	0	0	0	0	21	1291	27
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	87	0	0	66	0	0	0	0	0	1337	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.4			8.4						53.1	
Effective Green, g (s)		8.9			8.9						53.1	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		184			170						3360	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.30	
v/c Ratio		0.47			0.39						0.40	
Uniform Delay, d1		28.4			28.1						2.9	
Progression Factor		1.00			0.55						0.24	
Incremental Delay, d2		1.9			1.4						0.3	
Delay (s)		30.3			16.9						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.3			16.9			0.0			1.0	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	104	15	57	84	0	0	0	0	131	1051	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						0.99	
Satd. Flow (prot)		1831			1826						4531	
Flt Permitted		1.00			0.85						0.99	
Satd. Flow (perm)		1831			1577						4531	
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)	0	109	16	60	88	0	0	0	0	138	1106	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	148	0	0	0	0	0	1273	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		536			462						2686	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.28	
v/c Ratio		0.22			0.32						0.47	
Uniform Delay, d1		18.7			19.3						8.1	
Progression Factor		1.00			0.97						0.86	
Incremental Delay, d2		0.9			1.7						0.6	
Delay (s)		19.6			20.5						7.5	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.5			0.0			7.5	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	192	163	0	0	0	0	21	349	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.92	0.85
Flt Protected					0.97						1.00	1.00
Satd. Flow (prot)					977						2476	1400
Flt Permitted					0.97						1.00	1.00
Satd. Flow (perm)					977						2476	1400
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)	0	0	0	204	173	0	0	0	0	22	371	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	218	218
Lane Group Flow (vph)	0	0	0	0	377	0	0	0	0	0	582	189
Heavy Vehicles (%)	2%	2%	2%	91%	5%	2%	2%	2%	2%	0%	15%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					29.0						32.0	32.0
Effective Green, g (s)					29.5						32.5	32.5
Actuated g/C Ratio					0.42						0.46	0.46
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					412						1150	650
v/s Ratio Prot												
v/s Ratio Perm					0.39						0.24	0.14
v/c Ratio					0.92						0.51	0.29
Uniform Delay, d1					19.1						13.1	11.6
Progression Factor					1.01						0.20	0.19
Incremental Delay, d2					20.9						1.4	1.0
Delay (s)					40.3						4.1	3.2
Level of Service					D						A	A
Approach Delay (s)		0.0			40.3			0.0			3.8	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1109	22	0	0	0	0	0	0	19	502	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3112									2274	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3112									2274	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1275	25	0	0	0	0	0	0	22	577	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	1299	0	0	0	0	0	0	0	0	595	0
Heavy Vehicles (%)	0%	4%	10%	2%	2%	2%	2%	2%	2%	0%	36%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		36.1									24.9	
Effective Green, g (s)		36.6									25.4	
Actuated g/C Ratio		0.52									0.36	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1627									825	
v/s Ratio Prot		c0.42										
v/s Ratio Perm											0.26	
v/c Ratio		0.80									0.72	
Uniform Delay, d1		13.7									19.2	
Progression Factor		0.82									1.29	
Incremental Delay, d2		3.6									2.4	
Delay (s)		14.8									27.3	
Level of Service		B									C	
Approach Delay (s)		14.8			0.0			0.0			27.3	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1461	397	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1242			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1242			
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)	124	692	0	0	0	0	0	1538	418	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	804	0	0	0	0	0	1538	381	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	4%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		18.8						42.7	42.7			
Effective Green, g (s)		18.8						43.2	43.2			
Actuated g/C Ratio		0.27						0.62	0.62			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1229						1892	766			
v/s Ratio Prot								c0.50				
v/s Ratio Perm		0.18							0.31			
v/c Ratio		0.65						0.81	0.50			
Uniform Delay, d1		22.7						10.3	7.4			
Progression Factor		0.88						1.87	2.15			
Incremental Delay, d2		1.2						3.4	2.0			
Delay (s)		21.2						22.7	17.9			
Level of Service		C						C	B			
Approach Delay (s)		21.2			0.0			21.7			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	553	411	76	1407	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3254			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3254			2943				
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)	0	0	0	0	570	424	78	1451	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	976	0	0	1524	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					23.4			37.6				
Effective Green, g (s)					23.9			38.1				
Actuated g/C Ratio					0.34			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1111			1602				
v/s Ratio Prot					c0.30							
v/s Ratio Perm								0.52				
v/c Ratio					0.88			0.95				
Uniform Delay, d1					21.7			15.1				
Progression Factor					1.00			0.76				
Incremental Delay, d2					8.1			9.1				
Delay (s)					29.7			20.6				
Level of Service					C			C				
Approach Delay (s)		0.0			29.7			20.6			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1118	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2948									4361	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4361	
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)	0	290	45	0	0	0	0	0	0	394	1202	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	57	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1539	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.7									48.3	
Effective Green, g (s)		13.2									48.8	
Actuated g/C Ratio		0.19									0.70	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		556									3040	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.35	
v/c Ratio		0.56									0.51	
Uniform Delay, d1		25.8									5.0	
Progression Factor		1.00									0.65	
Incremental Delay, d2		1.3									0.5	
Delay (s)		27.1									3.8	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			3.8	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	324	296	0	0	0	0	0	1272	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.99						1.00	
Satd. Flow (prot)				1264	3277						4415	
Flt Permitted				0.95	0.99						1.00	
Satd. Flow (perm)				1264	3277						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	352	322	0	0	0	0	0	1383	68
RTOR Reduction (vph)	0	0	0	25	25	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	193	431	0	0	0	0	0	1445	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				16.8	16.8						44.2	
Effective Green, g (s)				17.3	17.3						44.7	
Actuated g/C Ratio				0.25	0.25						0.64	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				312	810						2819	
v/s Ratio Prot				c0.15	0.13						c0.33	
v/s Ratio Perm												
v/c Ratio				0.62	0.53						0.51	
Uniform Delay, d1				23.4	22.8						6.8	
Progression Factor				1.20	1.25						1.00	
Incremental Delay, d2				1.9	0.4						0.7	
Delay (s)				30.0	29.0						7.5	
Level of Service				C	C						A	
Approach Delay (s)		0.0			29.3			0.0			7.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
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)	11	1238	36	28	1027	2	349	8	18	17	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.98	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3311		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3125		1727	3311		1681	1672			1762	
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)	13	1456	42	33	1208	2	411	9	21	20	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1510	0	33	1210	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	9%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.3		5.4	80.7		17.3	17.3			5.0	
Effective Green, g (s)		72.3		5.4	81.7		18.3	18.3			6.0	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1915		79	2292		261	259			90	
v/s Ratio Prot				0.02	c0.37		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.53		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.8		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.56		1.00	1.00			1.00	
Incremental Delay, d2		3.4		2.8	0.7		22.4	19.9			1.7	
Delay (s)		20.5		59.5	5.6		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.5			7.0			69.6			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1575	102	53	1079	0	215	8	109	51	19	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3312		1727	3312		1665	1552			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3312		1727	3312		1665	1552			1751	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	1641	106	55	1124	0	224	8	114	53	20	25
RTOR Reduction (vph)	0	3	0	0	0	0	0	66	0	0	13	0
Lane Group Flow (vph)	26	1744	0	55	1124	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	9%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.3		7.6	66.3		14.5	14.5			11.6	
Effective Green, g (s)	6.6	66.3		7.6	67.3		15.5	15.5			12.6	
Actuated g/C Ratio	0.06	0.56		0.06	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1861		111	1889		219	204			187	
v/s Ratio Prot	0.02	c0.53		0.03	c0.34		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.27	0.94		0.50	0.60		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.9		53.3	16.5		49.9	47.6			49.5	
Progression Factor	0.78	0.60		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	8.6		2.5	1.4		21.0	2.2			2.1	
Delay (s)	42.3	22.9		55.9	17.9		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		23.2			19.6			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	963	3	516	903	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.93	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3176		3002	1491		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3176		3002	1491		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1189	4	637	1115	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1193	0	1195	557	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	16%	7%	7%	16%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	39.2		40.5	91.7		40.5
Effective Green, g (s)	41.2		42.5	91.7		42.5
Actuated g/C Ratio	0.45		0.46	1.00		0.46
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1427		1391	1491		1231
v/s Ratio Prot	c0.38		c0.40	0.37		0.14
v/s Ratio Perm						
v/c Ratio	0.84		0.86	0.37		0.31
Uniform Delay, d1	22.3		21.9	0.0		15.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	4.3		5.4	0.7		0.1
Delay (s)	26.6		27.4	0.7		15.5
Level of Service	C		C	A		B
Approach Delay (s)	26.6		18.9		15.5	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	91.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	20	0	0	8	19	635	1	3	340	55
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	21	0	0	8	20	668	1	3	358	58
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1117	1110	394	1096	1138	671	422			670		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1117	1110	394	1096	1138	671	422			670		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	178	205	655	182	197	459	1136			919		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	676	3	416
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	655	459	1136	1136	919	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.24
Queue Length 95th (ft)	2	1	1	1	0	0
Control Delay (s)	10.7	13.0	8.2	0.3	8.9	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.0	0.5		0.1	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	38.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	24	1	10	0	2	4	14	590	2	2	292	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	26	1	11	0	2	4	15	634	2	2	314	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1004	1001	330	995	1015	635	345			637		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1004	1001	330	995	1015	635	345			637		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	98	100	99	99	99			100		
cM capacity (veh/h)	216	240	714	218	236	480	1219			947		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	637	2	345
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	270	357	1219	1700	947	1700
Volume to Capacity	0.14	0.02	0.01	0.37	0.00	0.20
Queue Length 95th (ft)	12	1	1	0	0	0
Control Delay (s)	20.5	15.3	8.0	0.0	8.8	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	20.5	15.3	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	2	557	2	2	222	328
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	2	640	2	2	255	377
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1101	1095	444	909	1283	641	632			643		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1101	1095	444	909	1283	641	632			643		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	88	100	99	100	96	99	100			100		
cM capacity (veh/h)	183	214	618	244	158	459	960			952		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	643	2	632
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	377
cSH	203	223	960	1700	952	1700
Volume to Capacity	0.12	0.05	0.00	0.38	0.00	0.37
Queue Length 95th (ft)	10	4	0	0	0	0
Control Delay (s)	25.3	22.0	8.8	0.0	8.8	0.0
Lane LOS	D	C	A		A	
Approach Delay (s)	25.3	22.0	0.0		0.0	
Approach LOS	D	C				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	534	30	0	0	0	1	82	1	2	227	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	562	32	0	0	0	1	86	1	2	239	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			594			712	578	578	622	594	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			594			712	578	578	622	594	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	80	100	99	43	99
cM capacity (veh/h)	1604			992			188	428	518	336	418	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	594	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	423	433
Volume to Capacity	0.00	0.00	0.21	0.59
Queue Length 95th (ft)	0	0	19	93
Control Delay (s)	0.0	0.0	15.8	24.7
Lane LOS			C	C
Approach Delay (s)	0.0	0.0	15.8	24.7
Approach LOS			C	C

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	573	8	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	599	1	3	616	9	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1222	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1222	599
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		95	99
cM capacity (veh/h)			948		159	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	619	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	181
Volume to Capacity	0.35	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	26.1
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	26.1
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	550	0	2	528	10	70	1	162	8	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	598	0	2	574	11	76	1	176	9	2	8
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	586			601			1212	1208	603	1379	1203	581
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	586			601			1212	1208	603	1379	1203	581
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			51	99	65	89	99	98
cM capacity (veh/h)	974			959			154	182	500	76	178	505

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	587	253	18
Volume Left	9	2	76	9
Volume Right	0	11	176	8
cSH	974	959	298	130
Volume to Capacity	0.01	0.00	0.85	0.14
Queue Length 95th (ft)	1	0	184	12
Control Delay (s)	0.2	0.1	59.4	37.1
Lane LOS	A	A	F	E
Approach Delay (s)	0.2	0.1	59.4	37.1
Approach LOS			F	E

Intersection Summary			
Average Delay	10.9		
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	715	1	1	523	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	777	1	1	568	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	570			778			1352	1352	778	1352	1352	569
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570			778			1352	1352	778	1352	1352	569
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	99	100	100
cM capacity (veh/h)	988			825			127	150	397	127	150	522

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	779	571	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	988	825	192	204
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	24.0	22.9
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	24.0	22.9
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	630	34	186	468	11	6	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	692	37	204	514	12	7	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			730			1777	1749	713	1749	1762	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			730			1777	1749	713	1749	1762	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			65			84	96	99	59	98	94
cM capacity (veh/h)	1021			577			42	53	434	45	52	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	780	731	11	54
Volume Left	51	204	7	19
Volume Right	37	12	2	34
cSH	1021	577	54	108
Volume to Capacity	0.05	0.35	0.20	0.50
Queue Length 95th (ft)	4	40	17	56
Control Delay (s)	1.3	9.5	88.1	67.3
Lane LOS	A	A	F	F
Approach Delay (s)	1.3	9.5	88.1	67.3
Approach LOS			F	F

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	649	0	0	27	664
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	705	0	0	29	722
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			780	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			780	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			357	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	705	29	722
Volume Left	0	29	0
Volume Right	705	0	0
cSH	1700	1578	1700
Volume to Capacity	0.41	0.02	0.42
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	662	5	0	192	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	727	5	0	211	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1458	1458	1460	0
vC1, stage 1 conf vol			1458	1458	0	
vC2, stage 2 conf vol			0	0	1460	
vCu, unblocked vol	0		1458	1458	1460	0
tC, single (s)	4.2		7.1	7.3	6.5	6.2
tC, 2 stage (s)			6.1	6.3	5.5	
tF (s)	2.3		3.5	4.8	4.0	3.3
p0 queue free %	54		100	0	100	100
cM capacity (veh/h)	1597		80	47	95	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	485	248	211
Volume Left	485	242	0
Volume Right	0	5	0
cSH	1597	1597	47
Volume to Capacity	0.46	0.46	4.46
Queue Length 95th (ft)	61	61	Err
Control Delay (s)	9.1	9.0	Err
Lane LOS	A	A	F
Approach Delay (s)	9.1		Err
Approach LOS			F

Intersection Summary			
Average Delay	2242.0		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	21	3	0	0	169	7	12	830	20	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	3	0	0	192	8	14	943	23	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	603	993	0	984	982	483	0			966		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	603	993	0	984	982	483	0			966		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	99	100	100	22	99	99			100		
cM capacity (veh/h)	136	245	1091	201	247	532	1600			709		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	485	494
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	144	253	1600	1700
Volume to Capacity	0.19	0.79	0.01	0.29
Queue Length 95th (ft)	17	149	1	0
Control Delay (s)	35.6	57.6	0.3	0.0
Lane LOS	E	F	A	
Approach Delay (s)	35.6	57.6	0.1	
Approach LOS	E	F		

Intersection Summary				
Average Delay		10.5		
Intersection Capacity Utilization		46.6%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	6	0	0	16	2	5	844	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	6	0	0	17	2	5	879	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	460	895	2	897	892	442	0			884		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460	895	2	897	892	442	0			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	94	100	100			100		
cM capacity (veh/h)	464	281	1086	233	282	569	1593			761		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	445	445
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	357	299	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.26
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	15.5	17.8	0.1	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.5	17.8	0.1	
Approach LOS	C	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	31	797	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	105	9	36	927	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	600	1013	4	1011	1009	471	3			938		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600	1013	4	1011	1009	471	3			938		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	94	97	100	100	49	98	98			100		
cM capacity (veh/h)	200	204	1019	162	205	492	1592			724		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	499	470
Volume Left	12	0	36	0
Volume Right	0	9	0	7
cSH	202	215	1592	1700
Volume to Capacity	0.09	0.53	0.02	0.28
Queue Length 95th (ft)	8	69	2	0
Control Delay (s)	24.7	39.2	0.7	0.0
Lane LOS	C	E	A	
Approach Delay (s)	24.7	39.2	0.4	
Approach LOS	C	E		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	34	0	0	0	0	3	509	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	4	100	40	0	0	0	0	4	606	10
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.88	0.88	0.88	0.88	0.88		0.88					
vC, conflicting volume	641	628	311	328	633	7	618			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	308	293	0	0	299	7	283			7		
tC, single (s)	7.8	6.8	7.2	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.4	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	92	100	100			100		
cM capacity (veh/h)	481	510	912	853	527	1055	1116			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	140	307	312
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	559	724	1541	1700
Volume to Capacity	0.03	0.19	0.00	0.18
Queue Length 95th (ft)	2	18	0	0
Control Delay (s)	11.7	11.2	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.7	11.2	0.1	
Approach LOS	B	B		

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	570	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	613	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	650	642	315	340	648	4	626			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	642	315	340	648	4	626			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	347	392	687	575	389	1080	952			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	317	319
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	418	481	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.9	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.9	13.0	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		35.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	525	65	0	30	1	121	41	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	559	69	0	32	1	129	44	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	628			0			643	621	316	326	655	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628			0			643	621	316	326	655	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	77	89	100
cM capacity (veh/h)	950			1565			329	403	686	565	383	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	293	348	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	408	504
Volume to Capacity	0.01	0.20	0.08	0.34
Queue Length 95th (ft)	1	0	7	38
Control Delay (s)	0.4	0.0	14.6	15.8
Lane LOS	A		B	C
Approach Delay (s)	0.2		14.6	15.8
Approach LOS			B	C

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	176	0	176	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	191	0	191	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	240			29			165	174	145	261	261	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240			29			165	174	145	261	261	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	67	100	99	100	100
cM capacity (veh/h)	1326			1584			804	574	908	504	634	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	240	191	5
Volume Left	0	0	0	5
Volume Right	17	191	0	0
cSH	1326	1584	574	504
Volume to Capacity	0.00	0.00	0.33	0.01
Queue Length 95th (ft)	0	0	36	1
Control Delay (s)	0.0	0.0	14.4	12.2
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	14.4	12.2
Approach LOS			B	B

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	10	220	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	11	239	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	253	240	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	253	240	240			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	735	799	1338			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	240
Volume Left	1	1	0
Volume Right	1	0	1
cSH	766	1338	1700
Volume to Capacity	0.00	0.00	0.14
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.7	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.7	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	507	6	16	3	5	5	0	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	39	452	5	5	583	7	18	3	6	6	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	583			456			1172	1124	454	1133	1130	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			456			1172	1124	454	1133	1130	586
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			87	98	99	96	100	90
cM capacity (veh/h)	949			1115			141	189	588	163	187	494

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	590	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	949	1700	1115	1700	174	406
Volume to Capacity	0.04	0.27	0.00	0.35	0.16	0.13
Queue Length 95th (ft)	3	0	0	0	14	11
Control Delay (s)	9.0	0.0	8.2	0.0	29.5	15.2
Lane LOS	A		A		D	C
Approach Delay (s)	0.7		0.1		29.5	15.2
Approach LOS					D	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	446	110	8	14	38	52	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	361	11	16	485	120	9	15	41	57	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	604			372			1013	1040	366	1029	986	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	604			372			1013	1040	366	1029	986	545
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			95	93	94	69	97	95
cM capacity (veh/h)	936			1144			186	212	653	184	240	541

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	621	65	92
Volume Left	18	16	9	57
Volume Right	11	120	41	29
cSH	936	1144	359	237
Volume to Capacity	0.02	0.01	0.18	0.39
Queue Length 95th (ft)	2	1	16	44
Control Delay (s)	0.6	0.4	17.2	29.5
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	17.2	29.5
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	288	2	4	0	339	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	324	2	4	0	381	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381			326			356	737	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			326			356	737	325	406	357	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	89	95	100	100	100
cM capacity (veh/h)	1151			596			591	340	716	481	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	381	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	381	33
cSH	1151	1700	596	1700	453
Volume to Capacity	0.01	0.19	0.01	0.22	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.2	0.0	11.1	0.0	14.4
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.1		14.4
Approach LOS					B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/12/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	39	0	2	0	0	0	31	50	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	0	2	0	0	0	36	59	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		112	94	0	170	93	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		112	94	0	170	93	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	95	100	95	100
cM capacity (veh/h)	1554			1620		809	767	1076	711	777	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	48	0	95	40
Volume Left	46	0	0	2
Volume Right	2	0	59	0
cSH	1554	1700	932	773
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	332	4	15	450	31	10	7	24	32	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1770			1844			1759	1538		1747	
Flt Permitted		0.98			0.99			0.79	1.00		0.80	
Satd. Flow (perm)		1744			1824			1429	1538		1446	
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)	12	357	4	16	484	33	11	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	373	0	0	531	0	0	19	3	0	44	0
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		24.1			24.1			4.3	4.3		4.3	
Effective Green, g (s)		24.6			24.6			4.8	4.8		4.8	
Actuated g/C Ratio		0.66			0.66			0.13	0.13		0.13	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1147			1200			183	197		186	
v/s Ratio Prot												
v/s Ratio Perm		0.21			c0.29			0.01	0.00		c0.03	
v/c Ratio		0.32			0.44			0.10	0.02		0.24	
Uniform Delay, d1		2.8			3.1			14.4	14.2		14.7	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.3	0.0		0.7	
Delay (s)		3.0			3.4			14.7	14.3		15.3	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.0			3.4			14.4			15.3	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	37.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	2	262	19	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	203	17	2	298	22	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			220		506	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					302	
vCu, unblocked vol			220		506	203
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		97	100
cM capacity (veh/h)			1355		655	808

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	2	298	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1355	1700	672
Volume to Capacity	0.12	0.01	0.00	0.18	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.6
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.6
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	1207	11	0	0	0	0	55	24	16	81	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3343						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3343						3240			3066	
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)	128	1298	12	0	0	0	0	59	26	17	87	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1438	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2622						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.43									c0.03	
v/c Ratio		0.55						0.19			0.33	
Uniform Delay, d1		2.9						28.8			29.3	
Progression Factor		1.00						1.00			0.59	
Incremental Delay, d2		0.8						0.3			0.6	
Delay (s)		3.7						29.1			17.8	
Level of Service		A						C			B	
Approach Delay (s)		3.7			0.0			29.1			17.8	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1180	64	0	0	0	0	80	121	77	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3335						1711			1621	
Flt Permitted		1.00						1.00			0.73	
Satd. Flow (perm)		3335						1711			1204	
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)	18	1388	75	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	1477	0	0	0	0	0	211	0	0	187	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		30.4						14.8			14.8	
Effective Green, g (s)		30.4						14.8			14.8	
Actuated g/C Ratio		0.57						0.28			0.28	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1906						476			335	
v/s Ratio Prot								0.12				
v/s Ratio Perm		0.44									c0.16	
v/c Ratio		0.77						0.44			0.56	
Uniform Delay, d1		8.8						15.8			16.4	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.0						0.7			2.0	
Delay (s)		10.7						16.5			18.4	
Level of Service		B						B			B	
Approach Delay (s)		10.7			0.0			16.5			18.4	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	53.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1167	18	0	0	0	0	25	24	25	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3351						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3351						1597			1355	
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)	23	1203	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1244	0	0	0	0	0	29	0	0	55	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		30.8						4.5			4.5	
Effective Green, g (s)		31.3						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2368						180			153	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.37									c0.04	
v/c Ratio		0.53						0.16			0.36	
Uniform Delay, d1		3.0						17.8			18.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.4			1.4	
Delay (s)		3.2						18.2			19.6	
Level of Service		A						B			B	
Approach Delay (s)		3.2			0.0			18.2			19.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	44.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.7%	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 (veh/h)	47	1191	19	0	0	0	0	31	36	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	48	1228	20	0	0	0	0	32	37	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1247			1358	1335	624	764	1344	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1247			1358	1335	624	764	1344	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	78	91	79	69	100
cM capacity (veh/h)	1607			554			79	147	426	220	148	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	662	634	69	92
Volume Left	48	0	0	45
Volume Right	0	20	37	0
cSH	1607	1700	226	177
Volume to Capacity	0.03	0.37	0.31	0.52
Queue Length 95th (ft)	2	0	31	65
Control Delay (s)	0.9	0.0	27.7	45.4
Lane LOS	A		D	E
Approach Delay (s)	0.4		27.7	45.4
Approach LOS			D	E

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	859	12	0	0	0	0	415	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3323						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	934	13	0	0	0	0	451	9	0	0	0
RTOR Reduction (vph)	54	2	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	54	945	0	0	0	0	0	458	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	19.0	19.0						11.1				
Effective Green, g (s)	20.0	20.0						12.1				
Actuated g/C Ratio	0.50	0.50						0.30				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	874	1657						1054				
v/s Ratio Prot		c0.28						c0.13				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.57						0.43				
Uniform Delay, d1	5.2	7.0						11.3				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.5						0.3				
Delay (s)	5.2	7.5						11.5				
Level of Service	A	A						B				
Approach Delay (s)		7.3			0.0			11.5			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1076	70	0	0	0	0	27	171	41	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1575	1504		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.75	
Satd. Flow (perm)		2893	1300					1575	1504		1393	
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)	18	1157	75	0	0	0	0	29	184	44	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	47	47	0	0	0
Lane Group Flow (vph)	0	1175	66	0	0	0	0	61	58	0	78	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.2	53.2					7.8	7.8		7.8	
Effective Green, g (s)		53.7	53.7					8.3	8.3		8.3	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2219	997					187	178		165	
v/s Ratio Prot		c0.41						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.53	0.07					0.33	0.33		0.47	
Uniform Delay, d1		3.2	2.0					28.3	28.3		28.8	
Progression Factor		0.31	0.29					1.00	1.00		1.00	
Incremental Delay, d2		0.8	0.1					1.0	1.1		2.1	
Delay (s)		1.8	0.7					29.3	29.4		30.9	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.7			0.0			29.3			30.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1047	24	0	0	0	0	12	86	7	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2882						1314			1462	
Flt Permitted		1.00						1.00			0.87	
Satd. Flow (perm)		2882						1314			1291	
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)	24	1102	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	56	0	0	0	0
Lane Group Flow (vph)	0	1150	0	0	0	0	0	48	0	0	18	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.8						7.2			7.2	
Effective Green, g (s)		54.8						7.2			7.2	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2256						135			133	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.40									0.01	
v/c Ratio		0.51						0.36			0.14	
Uniform Delay, d1		2.7						29.2			28.6	
Progression Factor		0.39						1.00			1.00	
Incremental Delay, d2		0.6						1.6			0.5	
Delay (s)		1.7						30.9			29.0	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			30.9			29.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	906	16	0	0	0	0	0	29	289	216	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2887							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2887							1289	1681	1405	
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)	0	954	17	0	0	0	0	0	31	304	227	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	178	9	0
Lane Group Flow (vph)	0	969	0	0	0	0	0	0	4	83	261	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		28.6							9.5	18.4	18.4	
Effective Green, g (s)		29.1							10.0	18.9	18.9	
Actuated g/C Ratio		0.42							0.14	0.27	0.27	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1200							184	454	379	
v/s Ratio Prot		c0.34							c0.00	0.05	c0.19	
v/s Ratio Perm												
v/c Ratio		0.81							0.02	0.18	0.69	
Uniform Delay, d1		18.0							25.8	19.6	22.9	
Progression Factor		1.09							1.00	1.00	1.00	
Incremental Delay, d2		5.5							0.2	0.9	9.8	
Delay (s)		25.1							26.0	20.5	32.7	
Level of Service		C							C	C	C	
Approach Delay (s)		25.1			0.0			26.0			26.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	25.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	383	12	0	0	0	0	45	25	460	47	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2879						1418		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2879						1418		1681	1360	
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)	7	407	13	0	0	0	0	48	27	489	50	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	424	0	0	0	0	0	51	0	269	270	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		17.6						6.9		32.0	32.0	
Effective Green, g (s)		18.1						7.4		32.5	32.5	
Actuated g/C Ratio		0.26						0.11		0.46	0.46	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		744						150		780	631	
v/s Ratio Prot								c0.04		0.16	c0.20	
v/s Ratio Perm		0.15										
v/c Ratio		0.57						0.34		0.34	0.43	
Uniform Delay, d1		22.6						29.0		12.0	12.5	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.0						1.3		1.2	2.1	
Delay (s)		23.6						30.4		13.2	14.7	
Level of Service		C						C		B	B	
Approach Delay (s)		23.6			0.0			30.4			13.9	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	309	0	517	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1791		2111		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1791		2111		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	343	0	574	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	343	0	574	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		29.3		29.3		
Effective Green, g (s)		29.3		29.3		
Actuated g/C Ratio		0.74		0.74		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1332		1570		
v/s Ratio Prot		0.19		c0.27		
v/s Ratio Perm						
v/c Ratio		0.26		0.37		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.1		
Delay (s)		1.7		1.9		
Level of Service		A		A		
Approach Delay (s)	1.7			1.9	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	39.4	Sum of lost time (s)	10.1
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	894	22	18	163	0	0	90	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3490			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3490			3041			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	931	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	78	0
Lane Group Flow (vph)	0	0	0	0	967	0	0	189	0	0	269	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					49.1			11.9			11.9	
Effective Green, g (s)					49.6			12.4			12.4	
Actuated g/C Ratio					0.71			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2473			539			531	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.28			0.06				
v/c Ratio					0.39			0.35			0.51	
Uniform Delay, d1					4.1			25.3			26.0	
Progression Factor					1.16			1.04			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					5.2			26.6			26.8	
Level of Service					A			C			C	
Approach Delay (s)		0.0			5.2			26.6			26.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1196	19	13	381	0	0	51	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
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3353			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3353			1679			1710	1615
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)	0	0	0	15	1272	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	50
Lane Group Flow (vph)	0	0	0	0	1305	0	0	419	0	0	54	240
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2060			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.39			c0.25				0.15
v/c Ratio					0.63			0.92			0.12	0.55
Uniform Delay, d1					8.5			24.8			19.2	21.8
Progression Factor					0.67			1.00			1.00	1.00
Incremental Delay, d2					1.4			26.1			0.5	4.9
Delay (s)					7.2			50.8			19.7	26.7
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.2			50.8			25.6	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	70.0	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)	0	0	0	44	1120	92	32	68	0	0	211	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3567	1554		1815			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3567	1554		1551			1794	
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)	0	0	0	46	1179	97	34	72	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1225	54	0	106	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					29.0	29.0		14.7			14.7	
Effective Green, g (s)					29.0	29.0		14.7			14.7	
Actuated g/C Ratio					0.56	0.56		0.28			0.28	
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)					2001	872		441			510	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.34	0.04		0.07				
v/c Ratio					0.61	0.06		0.24			0.59	
Uniform Delay, d1					7.6	5.2		14.2			15.9	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.3			1.7	
Delay (s)					8.2	5.2		14.5			17.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			7.9			14.5			17.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	51.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1280	5	18	7	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.96			1.00	
Satd. Flow (prot)					3324			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3324			1676			1777	
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)	0	0	0	35	1362	5	19	7	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1402	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.9			1.3			1.3	
Effective Green, g (s)					30.4			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2514			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.42			c0.02				
v/c Ratio					0.56			0.35			0.29	
Uniform Delay, d1					2.1			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			2.8			2.0	
Delay (s)					2.3			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.3			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	42	1171	12	52	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	46	1287	13	57	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1300			0			758	1392	0	1393	1386	650
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1300			0			758	1392	0	1393	1386	650
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			77	90	100	100	86	97
cM capacity (veh/h)	529			1622			251	137	1084	93	140	417

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	690	657	71	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	215	188
Volume to Capacity	0.03	0.39	0.33	0.17
Queue Length 95th (ft)	2	0	35	15
Control Delay (s)	0.8	0.0	29.8	28.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		29.8	28.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1159	2	471	23	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3361		1618	1630				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1618	1630				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1302	2	529	26	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	158	158	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1304	0	117	122	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					26.4		10.0	10.0				0.6
Effective Green, g (s)					27.4		11.0	11.0				1.6
Actuated g/C Ratio					0.53		0.21	0.21				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1771		342	345				50
v/s Ratio Prot					c0.39							
v/s Ratio Perm							0.07	0.08				c0.00
v/c Ratio					0.74		0.34	0.35				0.00
Uniform Delay, d1					9.5		17.4	17.5				24.4
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.6		0.6	0.6				0.0
Delay (s)					11.1		18.0	18.1				24.5
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.1			18.1			24.5	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations			↑↑	↱		↱
Volume (veh/h)	0	0	1222	184	0	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1286	194	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1286				1286	643
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1286				1286	643
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	78
cM capacity (veh/h)	535				153	411

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	643	643	194	89
Volume Left	0	0	0	0
Volume Right	0	0	194	89
cSH	1700	1700	1700	411
Volume to Capacity	0.38	0.38	0.11	0.22
Queue Length 95th (ft)	0	0	0	20
Control Delay (s)	0.0	0.0	0.0	16.2
Lane LOS				C
Approach Delay (s)	0.0			16.2
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
479: Sumner Avenue/N Alder Street/Lincoln Street #1011 & 6th Street

8/12/2009

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	474	1066	0	0	8	98	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	489	1099	0	0	8	101	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			489	489	489	1588	1588	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			489	489	489	1588	1588	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	6	100	
cM capacity (veh/h)			480	579	490	108	413	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	855	733	8	101
Volume Left	0	0	8	0
Volume Right	366	733	0	0
cSH	1700	1700	490	108
Volume to Capacity	0.50	0.43	0.02	0.94
Queue Length 95th (ft)	0	0	1	144
Control Delay (s)	0.0	0.0	12.5	143.6
Lane LOS			B	F
Approach Delay (s)	0.0		133.7	
Approach LOS			F	

Intersection Summary			
Average Delay	8.6		
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	52	0	0	1186	0	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	0	0	1289	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	0	0	1289	0	508
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.3			46.7		69.0
Effective Green, g (s)	13.8			47.2		69.0
Actuated g/C Ratio	0.20			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	354			2398		2787
v/s Ratio Prot	0.03			c0.37		
v/s Ratio Perm						c0.18
v/c Ratio	0.16			0.54		0.18
Uniform Delay, d1	22.8			5.4		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.8		0.1
Delay (s)	22.9			6.3		0.1
Level of Service	C			A		A
Approach Delay (s)	22.9			6.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	609	577	467	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1694	1845	3467	
Flt Permitted			0.39	1.00	1.00	
Satd. Flow (perm)			695	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	634	601	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	634	601	518	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			49.8	54.3	25.2	
Effective Green, g (s)			50.8	54.8	25.7	
Actuated g/C Ratio			0.74	0.79	0.37	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			875	1465	1291	
v/s Ratio Prot			c0.26	0.33	0.15	
v/s Ratio Perm			c0.27			
v/c Ratio			0.72	0.41	0.40	
Uniform Delay, d1			4.3	2.2	16.0	
Progression Factor			0.45	0.08	1.00	
Incremental Delay, d2			2.2	0.7	0.1	
Delay (s)			4.2	0.9	16.1	
Level of Service			A	A	B	
Approach Delay (s)	0.0			2.6	16.1	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	947	218	0	0	0	21	0	532	257	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.95				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2364				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2364				
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)	1018	234	0	0	0	23	0	572	276	0	0	0
RTOR Reduction (vph)	359	91	0	0	0	23	0	57	0	0	0	0
Lane Group Flow (vph)	262	540	0	0	0	0	0	791	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	15%	41%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	24.2	24.2				2.4		31.4				
Effective Green, g (s)	24.7	24.7				1.4		31.9				
Actuated g/C Ratio	0.35	0.35				0.02		0.46				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	571	587				26		1077				
v/s Ratio Prot								c0.33				
v/s Ratio Perm	0.16	0.33				c0.00						
v/c Ratio	0.46	0.92				0.02		0.73				
Uniform Delay, d1	17.5	21.7				33.6		15.6				
Progression Factor	1.26	0.33				1.00		1.00				
Incremental Delay, d2	1.4	13.8				0.1		2.6				
Delay (s)	23.4	21.0				33.7		18.2				
Level of Service	C	C				C		B				
Approach Delay (s)		22.2			33.7			18.2			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	21	0	0	272	18	95	1413	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1386			4786				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1264			1386			4786				
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)	17	22	0	0	286	19	100	1487	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	301	0	0	1593	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	38%	5%	38%	6%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.7			20.7			40.3				
Effective Green, g (s)		21.2			21.2			40.8				
Actuated g/C Ratio		0.30			0.30			0.58				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		383			420			2790				
v/s Ratio Prot					c0.22							
v/s Ratio Perm		0.03						0.33				
v/c Ratio		0.10			0.72			0.57				
Uniform Delay, d1		17.6			21.7			9.1				
Progression Factor		0.71			1.00			0.87				
Incremental Delay, d2		0.1			5.7			0.6				
Delay (s)		12.6			27.5			8.5				
Level of Service		B			C			A				
Approach Delay (s)		12.6			27.5			8.5			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	64	1465	96	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1712	1504		4522				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4522				
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)	95	152	0	0	86	120	67	1542	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	24	0	9	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	72	0	1701	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	6%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.3			17.3	17.3		44.2				
Effective Green, g (s)		17.8			17.8	17.8		44.2				
Actuated g/C Ratio		0.25			0.25	0.25		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		316			435	382		2855				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.38				
v/c Ratio		0.78			0.22	0.19		0.60				
Uniform Delay, d1		24.3			20.6	20.4		7.6				
Progression Factor		0.96			1.00	1.00		1.94				
Incremental Delay, d2		11.3			0.3	0.2		0.8				
Delay (s)		34.6			20.9	20.7		15.6				
Level of Service		C			C	C		B				
Approach Delay (s)		34.6			20.8			15.6			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	76	31	0	0	71	32	28	1461	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1785			4381				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4381				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	87	36	0	0	82	37	32	1679	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	19	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	100	0	0	1760	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.5			11.5			50.0				
Effective Green, g (s)		12.0			12.0			50.0				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		227			306			3129				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.09						0.40				
v/c Ratio		0.54			0.33			0.56				
Uniform Delay, d1		26.5			25.5			4.8				
Progression Factor		1.61			1.00			0.26				
Incremental Delay, d2		2.6			0.6			0.6				
Delay (s)		45.1			26.1			1.8				
Level of Service		D			C			A				
Approach Delay (s)		45.1			26.1			1.8			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	233	25	0	0	32	18	54	1635	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4390				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4390				
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)	248	27	0	0	34	19	57	1739	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	275	0	0	42	0	0	1816	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.4			20.4			39.6				
Effective Green, g (s)		20.9			20.9			41.1				
Actuated g/C Ratio		0.30			0.30			0.59				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		315			423			2578				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.41				
v/c Ratio		0.87			0.10			0.70				
Uniform Delay, d1		23.3			17.7			10.2				
Progression Factor		0.67			1.00			0.59				
Incremental Delay, d2		22.1			0.1			1.4				
Delay (s)		37.7			17.8			7.4				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.8			7.4			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1607	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1374			4395				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1374			4395				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	60	17	0	0	8	11	25	1826	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	9	0	0	1868	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		151			183			3309				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.43				
v/c Ratio		0.51			0.05			0.56				
Uniform Delay, d1		28.2			26.5			3.7				
Progression Factor		0.82			1.00			0.26				
Incremental Delay, d2		2.6			0.1			0.5				
Delay (s)		25.9			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		25.9			26.6			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	56	37	34	35	0	0	0	0	17	1314	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4426	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1185						4426	
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)	0	62	41	38	39	0	0	0	0	19	1460	40
RTOR Reduction (vph)	0	35	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	68	0	0	77	0	0	0	0	0	1517	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.5			8.5						53.0	
Effective Green, g (s)		9.0			9.0						53.0	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		181			152						3351	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.06						0.34	
v/c Ratio		0.38			0.51						0.45	
Uniform Delay, d1		27.9			28.4						3.1	
Progression Factor		1.00			0.94						0.69	
Incremental Delay, d2		1.3			2.6						0.4	
Delay (s)		29.2			29.4						2.6	
Level of Service		C			C						A	
Approach Delay (s)		29.2			29.4			0.0			2.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
311: Broadway Street & W Wishkah Street #1011

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	145	35	24	68	0	0	0	0	8	1173	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1451			1471						4404	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1451			1325						4404	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	158	38	26	74	0	0	0	0	9	1275	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	100	0	0	0	0	0	1361	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		13.9			13.9						46.1	
Effective Green, g (s)		14.4			14.4						47.6	
Actuated g/C Ratio		0.21			0.21						0.68	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		298			273						2995	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.08						0.31	
v/c Ratio		0.61			0.37						0.45	
Uniform Delay, d1		25.2			23.9						5.2	
Progression Factor		1.00			0.95						0.26	
Incremental Delay, d2		3.5			0.8						0.5	
Delay (s)		28.7			23.5						1.8	
Level of Service		C			C						A	
Approach Delay (s)		28.7			23.5			0.0			1.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1188	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1448			1471						4429	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1448			1339						4429	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	82	22	17	49	0	0	0	0	21	1291	27
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	87	0	0	66	0	0	0	0	0	1337	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.4			8.4						53.1	
Effective Green, g (s)		8.9			8.9						53.1	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		184			170						3360	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.30	
v/c Ratio		0.47			0.39						0.40	
Uniform Delay, d1		28.4			28.1						2.9	
Progression Factor		1.00			0.55						0.24	
Incremental Delay, d2		1.9			1.4						0.3	
Delay (s)		30.3			16.9						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.3			16.9			0.0			1.0	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	104	15	57	84	0	0	0	0	131	1051	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						0.99	
Satd. Flow (prot)		1831			1826						4531	
Flt Permitted		1.00			0.85						0.99	
Satd. Flow (perm)		1831			1577						4531	
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)	0	109	16	60	88	0	0	0	0	138	1106	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	148	0	0	0	0	0	1273	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		536			462						2686	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.28	
v/c Ratio		0.22			0.32						0.47	
Uniform Delay, d1		18.7			19.3						8.1	
Progression Factor		1.00			0.98						0.86	
Incremental Delay, d2		0.9			1.7						0.6	
Delay (s)		19.6			20.6						7.5	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.6			0.0			7.5	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	142	213	0	0	0	0	21	349	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.92	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					1025						2476	1400
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					1025						2476	1400
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)	0	0	0	151	227	0	0	0	0	22	371	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	215	215
Lane Group Flow (vph)	0	0	0	0	378	0	0	0	0	0	585	192
Heavy Vehicles (%)	2%	2%	2%	88%	17%	2%	2%	2%	2%	0%	15%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					28.4						32.6	32.6
Effective Green, g (s)					28.9						33.1	33.1
Actuated g/C Ratio					0.41						0.47	0.47
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					423						1171	662
v/s Ratio Prot												
v/s Ratio Perm					0.37						0.24	0.14
v/c Ratio					0.89						0.50	0.29
Uniform Delay, d1					19.1						12.7	11.3
Progression Factor					0.99						0.21	0.19
Incremental Delay, d2					18.5						1.4	1.0
Delay (s)					37.4						4.0	3.1
Level of Service					D						A	A
Approach Delay (s)		0.0			37.4			0.0			3.7	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1109	72	0	0	0	0	0	0	19	452	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		0.99									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3000									2343	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3000									2343	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1275	83	0	0	0	0	0	0	22	520	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	1353	0	0	0	0	0	0	0	0	537	0
Heavy Vehicles (%)	0%	4%	58%	2%	2%	2%	2%	2%	2%	0%	32%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		37.6									23.4	
Effective Green, g (s)		38.1									23.9	
Actuated g/C Ratio		0.54									0.34	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1633									800	
v/s Ratio Prot		c0.45										
v/s Ratio Perm											0.23	
v/c Ratio		0.83									0.67	
Uniform Delay, d1		13.2									19.7	
Progression Factor		0.80									1.32	
Incremental Delay, d2		4.3									1.7	
Delay (s)		14.8									27.8	
Level of Service		B									C	
Approach Delay (s)		14.8			0.0			0.0			27.8	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1461	397	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1242			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1242			
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)	124	692	0	0	0	0	0	1538	418	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	804	0	0	0	0	0	1538	381	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	4%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		18.8						42.7	42.7			
Effective Green, g (s)		18.8						43.2	43.2			
Actuated g/C Ratio		0.27						0.62	0.62			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1229						1892	766			
v/s Ratio Prot								c0.50				
v/s Ratio Perm		0.18							0.31			
v/c Ratio		0.65						0.81	0.50			
Uniform Delay, d1		22.7						10.3	7.4			
Progression Factor		0.88						1.87	2.15			
Incremental Delay, d2		1.2						3.4	2.0			
Delay (s)		21.2						22.7	17.9			
Level of Service		C						C	B			
Approach Delay (s)		21.2			0.0			21.7			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	553	411	76	1407	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3254			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3254			2943				
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)	0	0	0	0	570	424	78	1451	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	976	0	0	1524	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					23.4			37.6				
Effective Green, g (s)					23.9			38.1				
Actuated g/C Ratio					0.34			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1111			1602				
v/s Ratio Prot					c0.30							
v/s Ratio Perm								0.52				
v/c Ratio					0.88			0.95				
Uniform Delay, d1					21.7			15.1				
Progression Factor					1.00			0.76				
Incremental Delay, d2					8.1			9.1				
Delay (s)					29.7			20.6				
Level of Service					C			C				
Approach Delay (s)		0.0			29.7			20.6			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1118	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2948									4361	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4361	
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)	0	290	45	0	0	0	0	0	0	394	1202	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	57	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1539	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.7									48.3	
Effective Green, g (s)		13.2									48.8	
Actuated g/C Ratio		0.19									0.70	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		556									3040	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.35	
v/c Ratio		0.56									0.51	
Uniform Delay, d1		25.8									5.0	
Progression Factor		1.00									0.65	
Incremental Delay, d2		1.3									0.5	
Delay (s)		27.1									3.8	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			3.8	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	324	296	0	0	0	0	0	1272	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.99						1.00	
Satd. Flow (prot)				1264	3277						4415	
Flt Permitted				0.95	0.99						1.00	
Satd. Flow (perm)				1264	3277						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	352	322	0	0	0	0	0	1383	68
RTOR Reduction (vph)	0	0	0	25	25	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	193	431	0	0	0	0	0	1445	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				16.8	16.8						44.2	
Effective Green, g (s)				17.3	17.3						44.7	
Actuated g/C Ratio				0.25	0.25						0.64	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				312	810						2819	
v/s Ratio Prot				c0.15	0.13						c0.33	
v/s Ratio Perm												
v/c Ratio				0.62	0.53						0.51	
Uniform Delay, d1				23.4	22.8						6.8	
Progression Factor				1.20	1.25						1.00	
Incremental Delay, d2				1.9	0.4						0.7	
Delay (s)				30.0	29.0						7.5	
Level of Service				C	C						A	
Approach Delay (s)		0.0			29.3			0.0			7.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
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)	11	1238	36	28	1027	2	349	8	18	17	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.98	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3311		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3125		1727	3311		1681	1672			1762	
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)	13	1456	42	33	1208	2	411	9	21	20	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1510	0	33	1210	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	9%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.3		5.4	80.7		17.3	17.3			5.0	
Effective Green, g (s)		72.3		5.4	81.7		18.3	18.3			6.0	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1915		79	2292		261	259			90	
v/s Ratio Prot				0.02	c0.37		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.53		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.8		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.56		1.00	1.00			1.00	
Incremental Delay, d2		3.4		2.8	0.7		22.4	19.9			1.7	
Delay (s)		20.5		59.5	5.6		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.5			7.0			69.6			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1575	102	53	1079	0	215	8	109	51	19	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3312		1727	3312		1665	1552			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3312		1727	3312		1665	1552			1751	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	1641	106	55	1124	0	224	8	114	53	20	25
RTOR Reduction (vph)	0	3	0	0	0	0	0	66	0	0	13	0
Lane Group Flow (vph)	26	1744	0	55	1124	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	9%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.3		7.6	66.3		14.5	14.5			11.6	
Effective Green, g (s)	6.6	66.3		7.6	67.3		15.5	15.5			12.6	
Actuated g/C Ratio	0.06	0.56		0.06	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1861		111	1889		219	204			187	
v/s Ratio Prot	0.02	c0.53		0.03	c0.34		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.27	0.94		0.50	0.60		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.9		53.3	16.5		49.9	47.6			49.5	
Progression Factor	0.78	0.60		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	8.6		2.5	1.4		21.0	2.2			2.1	
Delay (s)	42.3	22.9		55.9	17.9		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		23.2			19.6			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	913	3	516	853	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.93	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3260		3038	1517		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3260		3038	1517		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1127	4	637	1053	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1131	0	1153	537	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	13%	7%	7%	14%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	36.2		38.0	86.2		38.0
Effective Green, g (s)	38.2		40.0	86.2		40.0
Actuated g/C Ratio	0.44		0.46	1.00		0.46
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1445		1410	1517		1232
v/s Ratio Prot	c0.35		c0.38	0.35		0.14
v/s Ratio Perm						
v/c Ratio	0.78		0.82	0.35		0.31
Uniform Delay, d1	20.5		20.0	0.0		14.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	2.7		3.7	0.6		0.1
Delay (s)	23.2		23.7	0.6		14.5
Level of Service	C		C	A		B
Approach Delay (s)	23.2		16.4		14.5	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	86.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	20	0	0	8	19	635	1	3	340	55
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	21	0	0	8	20	668	1	3	358	58
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1117	1110	394	1096	1138	671	422			670		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1117	1110	394	1096	1138	671	422			670		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	178	205	655	182	197	459	1136			919		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	676	3	416
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	655	459	1136	1136	919	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.24
Queue Length 95th (ft)	2	1	1	1	0	0
Control Delay (s)	10.7	13.0	8.2	0.3	8.9	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.0	0.5		0.1	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	38.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	24	1	10	0	2	4	14	590	2	2	292	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	26	1	11	0	2	4	15	634	2	2	314	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1004	1001	330	995	1015	635	345			637		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1004	1001	330	995	1015	635	345			637		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	98	100	99	99	99			100		
cM capacity (veh/h)	216	240	714	218	236	480	1219			947		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	637	2	345
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	270	357	1219	1700	947	1700
Volume to Capacity	0.14	0.02	0.01	0.37	0.00	0.20
Queue Length 95th (ft)	12	1	1	0	0	0
Control Delay (s)	20.5	15.3	8.0	0.0	8.8	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	20.5	15.3	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	2	507	2	2	222	278
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	2	583	2	2	255	320
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1014	1009	415	852	1168	584	575			585		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1014	1009	415	852	1168	584	575			585		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	90	100	99	100	97	99	100			100		
cM capacity (veh/h)	211	241	642	267	185	495	1008			1000		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	585	2	575
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	320
cSH	232	257	1008	1700	1000	1700
Volume to Capacity	0.11	0.04	0.00	0.34	0.00	0.34
Queue Length 95th (ft)	9	3	0	0	0	0
Control Delay (s)	22.4	19.6	8.6	0.0	8.6	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	22.4	19.6	0.0		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	484	30	0	0	0	1	82	1	2	227	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	509	32	0	0	0	1	86	1	2	239	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			541			659	525	525	569	541	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			541			659	525	525	569	541	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	81	100	99	47	99
cM capacity (veh/h)	1604			1038			216	459	554	369	448	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	541	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	454	463
Volume to Capacity	0.00	0.00	0.19	0.55
Queue Length 95th (ft)	0	0	18	82
Control Delay (s)	0.0	0.0	14.8	22.0
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	14.8	22.0
Approach LOS			B	C

Intersection Summary			
Average Delay	7.8		
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	573	8	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	599	1	3	616	9	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1222	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1222	599
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		95	99
cM capacity (veh/h)			948		159	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	619	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	181
Volume to Capacity	0.35	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	26.1
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	26.1
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	550	0	2	528	10	70	1	162	8	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	598	0	2	574	11	76	1	176	9	2	8
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	586			601			1212	1208	603	1379	1203	581
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	586			601			1212	1208	603	1379	1203	581
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			51	99	65	89	99	98
cM capacity (veh/h)	974			959			154	182	500	76	178	505

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	587	253	18
Volume Left	9	2	76	9
Volume Right	0	11	176	8
cSH	974	959	298	130
Volume to Capacity	0.01	0.00	0.85	0.14
Queue Length 95th (ft)	1	0	184	12
Control Delay (s)	0.2	0.1	59.4	37.1
Lane LOS	A	A	F	E
Approach Delay (s)	0.2	0.1	59.4	37.1
Approach LOS			F	E

Intersection Summary			
Average Delay	10.9		
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	715	1	1	523	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	777	1	1	568	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	570			778			1352	1352	778	1352	1352	569
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570			778			1352	1352	778	1352	1352	569
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	99	100	100
cM capacity (veh/h)	988			825			127	150	397	127	150	522

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	779	571	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	988	825	192	204
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	24.0	22.9
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	24.0	22.9
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	630	34	186	468	11	6	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	692	37	204	514	12	7	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			730			1777	1749	713	1749	1762	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			730			1777	1749	713	1749	1762	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			65			84	96	99	59	98	94
cM capacity (veh/h)	1021			577			42	53	434	45	52	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	780	731	11	54
Volume Left	51	204	7	19
Volume Right	37	12	2	34
cSH	1021	577	54	108
Volume to Capacity	0.05	0.35	0.20	0.50
Queue Length 95th (ft)	4	40	17	56
Control Delay (s)	1.3	9.5	88.1	67.3
Lane LOS	A	A	F	F
Approach Delay (s)	1.3	9.5	88.1	67.3
Approach LOS			F	F

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	649	0	0	27	664
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	705	0	0	29	722
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			780	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			780	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			357	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	705	29	722
Volume Left	0	29	0
Volume Right	705	0	0
cSH	1700	1578	1700
Volume to Capacity	0.41	0.02	0.42
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	662	5	0	192	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	727	5	0	211	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1458	1458	1460	0
vC1, stage 1 conf vol			1458	1458	0	
vC2, stage 2 conf vol			0	0	1460	
vCu, unblocked vol	0		1458	1458	1460	0
tC, single (s)	4.2		7.1	7.3	6.5	6.2
tC, 2 stage (s)			6.1	6.3	5.5	
tF (s)	2.3		3.5	4.8	4.0	3.3
p0 queue free %	54		100	0	100	100
cM capacity (veh/h)	1597		80	47	95	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	485	248	211
Volume Left	485	242	0
Volume Right	0	5	0
cSH	1597	1597	47
Volume to Capacity	0.46	0.46	4.46
Queue Length 95th (ft)	61	61	Err
Control Delay (s)	9.1	9.0	Err
Lane LOS	A	A	F
Approach Delay (s)	9.1		Err
Approach LOS			F

Intersection Summary			
Average Delay	2242.0		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	21	3	0	0	169	7	12	830	20	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	3	0	0	192	8	14	943	23	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	603	993	0	984	982	483	0			966		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	603	993	0	984	982	483	0			966		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	99	100	100	22	99	99			100		
cM capacity (veh/h)	136	245	1091	201	247	532	1600			709		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	485	494
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	144	253	1600	1700
Volume to Capacity	0.19	0.79	0.01	0.29
Queue Length 95th (ft)	17	149	1	0
Control Delay (s)	35.6	57.6	0.3	0.0
Lane LOS	E	F	A	
Approach Delay (s)	35.6	57.6	0.1	
Approach LOS	E	F		

Intersection Summary				
Average Delay		10.5		
Intersection Capacity Utilization		46.6%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	6	0	0	16	2	5	844	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	6	0	0	17	2	5	879	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	460	895	2	897	892	442	0			884		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460	895	2	897	892	442	0			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	94	100	100			100		
cM capacity (veh/h)	464	281	1086	233	282	569	1593			761		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	445	445
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	357	299	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.26
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	15.5	17.8	0.1	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.5	17.8	0.1	
Approach LOS	C	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	31	797	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	105	9	36	927	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	600	1013	4	1011	1009	471	3			938		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600	1013	4	1011	1009	471	3			938		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	94	97	100	100	49	98	98			100		
cM capacity (veh/h)	200	204	1019	162	205	492	1592			724		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	499	470
Volume Left	12	0	36	0
Volume Right	0	9	0	7
cSH	202	215	1592	1700
Volume to Capacity	0.09	0.53	0.02	0.28
Queue Length 95th (ft)	8	69	2	0
Control Delay (s)	24.7	39.2	0.7	0.0
Lane LOS	C	E	A	
Approach Delay (s)	24.7	39.2	0.4	
Approach LOS	C	E		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
359: N Washington Street & W Wishkah Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	34	0	0	0	0	3	509	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	4	100	40	0	0	0	0	4	606	10
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	641	628	311	328	633	7	618			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	363	348	0	13	353	7	338			7		
tC, single (s)	7.8	6.8	7.2	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.4	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	92	100	100			100		
cM capacity (veh/h)	446	483	931	852	501	1055	1087			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	140	307	312
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	535	709	1541	1700
Volume to Capacity	0.03	0.20	0.00	0.18
Queue Length 95th (ft)	3	18	0	0
Control Delay (s)	12.0	11.3	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	11.3	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.4		
Intersection Capacity Utilization		36.2%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	570	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	613	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	650	642	315	340	648	4	626			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	642	315	340	648	4	626			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	347	392	687	575	389	1080	952			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	317	319
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	418	481	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.9	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.9	13.0	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		35.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	525	65	0	30	1	121	41	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	559	69	0	32	1	129	44	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	628			0			643	621	316	326	655	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628			0			643	621	316	326	655	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	77	89	100
cM capacity (veh/h)	950			1565			329	403	686	565	383	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	293	348	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	408	504
Volume to Capacity	0.01	0.20	0.08	0.34
Queue Length 95th (ft)	1	0	7	38
Control Delay (s)	0.4	0.0	14.6	15.8
Lane LOS	A		B	C
Approach Delay (s)	0.2		14.6	15.8
Approach LOS			B	C

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	176	0	176	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	191	0	191	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	240			29			165	174	145	261	261	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240			29			165	174	145	261	261	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	67	100	99	100	100
cM capacity (veh/h)	1326			1584			804	574	908	504	634	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	240	191	5
Volume Left	0	0	0	5
Volume Right	17	191	0	0
cSH	1326	1584	574	504
Volume to Capacity	0.00	0.00	0.33	0.01
Queue Length 95th (ft)	0	0	36	1
Control Delay (s)	0.0	0.0	14.4	12.2
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	14.4	12.2
Approach LOS			B	B

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	10	220	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	11	239	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	253	240	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	253	240	240			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	735	799	1338			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	240
Volume Left	1	1	0
Volume Right	1	0	1
cSH	766	1338	1700
Volume to Capacity	0.00	0.00	0.14
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.7	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.7	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	507	6	16	3	5	5	0	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	39	452	5	5	583	7	18	3	6	6	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	583			456			1172	1124	454	1133	1130	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			456			1172	1124	454	1133	1130	586
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			87	98	99	96	100	90
cM capacity (veh/h)	949			1115			141	189	588	163	187	494

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	590	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	949	1700	1115	1700	174	406
Volume to Capacity	0.04	0.27	0.00	0.35	0.16	0.13
Queue Length 95th (ft)	3	0	0	0	14	11
Control Delay (s)	9.0	0.0	8.2	0.0	29.5	15.2
Lane LOS	A		A		D	C
Approach Delay (s)	0.7		0.1		29.5	15.2
Approach LOS					D	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	446	110	8	14	38	52	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	361	11	16	485	120	9	15	41	57	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	604			372			1013	1040	366	1029	986	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	604			372			1013	1040	366	1029	986	545
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			95	93	94	69	97	95
cM capacity (veh/h)	936			1144			186	212	653	184	240	541

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	621	65	92
Volume Left	18	16	9	57
Volume Right	11	120	41	29
cSH	936	1144	359	237
Volume to Capacity	0.02	0.01	0.18	0.39
Queue Length 95th (ft)	2	1	16	44
Control Delay (s)	0.6	0.4	17.2	29.5
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	17.2	29.5
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	288	2	4	0	339	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	324	2	4	0	381	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381			326			356	737	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			326			356	737	325	406	357	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	89	95	100	100	100
cM capacity (veh/h)	1151			596			591	340	716	481	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	381	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	381	33
cSH	1151	1700	596	1700	453
Volume to Capacity	0.01	0.19	0.01	0.22	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.2	0.0	11.1	0.0	14.4
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.1		14.4
Approach LOS					B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/12/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	39	0	2	0	0	0	31	50	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	0	2	0	0	0	36	59	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		112	94	0	170	93	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		112	94	0	170	93	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	95	100	95	100
cM capacity (veh/h)	1554			1620		809	767	1076	711	777	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	48	0	95	40
Volume Left	46	0	0	2
Volume Right	2	0	59	0
cSH	1554	1700	932	773
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	382	4	15	500	31	10	7	24	32	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1666			1767			1759	1538		1747	
Flt Permitted		0.98			0.99			0.81	1.00		0.80	
Satd. Flow (perm)		1643			1747			1461	1538		1446	
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)	12	411	4	16	538	33	11	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	22	0	12	0
Lane Group Flow (vph)	0	427	0	0	586	0	0	19	4	0	44	0
Heavy Vehicles (%)	7%	14%	7%	2%	7%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		26.2			26.2			5.7	5.7		5.7	
Effective Green, g (s)		26.7			26.7			6.2	6.2		6.2	
Actuated g/C Ratio		0.65			0.65			0.15	0.15		0.15	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1073			1140			221	233		219	
v/s Ratio Prot												
v/s Ratio Perm		0.26			c0.34			0.01	0.00		c0.03	
v/c Ratio		0.40			0.51			0.09	0.02		0.20	
Uniform Delay, d1		3.3			3.7			14.9	14.8		15.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.4			0.2	0.0		0.5	
Delay (s)		3.6			4.1			15.1	14.8		15.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.6			4.1			14.9			15.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	40.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	52	262	19	53
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	203	17	59	298	22	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			220		619	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					416	
vCu, unblocked vol			220		619	203
tC, single (s)			5.0		6.5	7.1
tC, 2 stage (s)					5.5	
tF (s)			3.0		3.6	4.1
p0 queue free %			94		96	91
cM capacity (veh/h)			955		560	656

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	59	298	82
Volume Left	0	0	59	0	22
Volume Right	0	17	0	0	60
cSH	1700	1700	955	1700	627
Volume to Capacity	0.12	0.01	0.06	0.18	0.13
Queue Length 95th (ft)	0	0	5	0	11
Control Delay (s)	0.0	0.0	9.0	0.0	11.6
Lane LOS			A		B
Approach Delay (s)	0.0		1.5		11.6
Approach LOS					B

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	1257	11	0	0	0	0	55	24	16	81	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3285						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3285						3240			3066	
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)	128	1352	12	0	0	0	0	59	26	17	87	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1492	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2576						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.45									c0.03	
v/c Ratio		0.58						0.19			0.33	
Uniform Delay, d1		3.0						28.8			29.3	
Progression Factor		1.00						1.00			0.57	
Incremental Delay, d2		1.0						0.3			0.6	
Delay (s)		3.9						29.1			17.4	
Level of Service		A						C			B	
Approach Delay (s)		3.9			0.0			29.1			17.4	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1230	64	0	0	0	0	80	121	77	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3275						1711			1621	
Flt Permitted		1.00						1.00			0.69	
Satd. Flow (perm)		3275						1711			1149	
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)	18	1447	75	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1536	0	0	0	0	0	214	0	0	187	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		33.8						15.1			15.1	
Effective Green, g (s)		33.8						15.1			15.1	
Actuated g/C Ratio		0.59						0.27			0.27	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1945						454			305	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.47									c0.16	
v/c Ratio		0.79						0.47			0.61	
Uniform Delay, d1		8.8						17.5			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.1						0.8			3.6	
Delay (s)		11.0						18.3			22.0	
Level of Service		B						B			C	
Approach Delay (s)		11.0			0.0			18.3			22.0	
Approach LOS		B			A			B			C	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1217	18	0	0	0	0	25	24	25	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3289						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3289						1597			1355	
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)	23	1255	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1296	0	0	0	0	0	29	0	0	55	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		32.0						4.5			4.5	
Effective Green, g (s)		32.5						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2349						175			149	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.39									c0.04	
v/c Ratio		0.55						0.16			0.37	
Uniform Delay, d1		3.1						18.4			18.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.3						0.4			1.5	
Delay (s)		3.3						18.8			20.3	
Level of Service		A						B			C	
Approach Delay (s)		3.3			0.0			18.8			20.3	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	45.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	1241	19	0	0	0	0	31	36	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	48	1279	20	0	0	0	0	32	37	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1299			1409	1386	649	790	1396	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1299			1409	1386	649	790	1396	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	77	91	78	66	100
cM capacity (veh/h)	1607			529			71	136	410	207	138	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	688	659	69	92
Volume Left	48	0	0	45
Volume Right	0	20	37	0
cSH	1607	1700	213	165
Volume to Capacity	0.03	0.39	0.32	0.55
Queue Length 95th (ft)	2	0	34	71
Control Delay (s)	0.8	0.0	29.9	50.9
Lane LOS	A		D	F
Approach Delay (s)	0.4		29.9	50.9
Approach LOS			D	F

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	909	12	0	0	0	0	415	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3230						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3230						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	988	13	0	0	0	0	451	9	0	0	0
RTOR Reduction (vph)	52	1	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	56	1000	0	0	0	0	0	458	0	0	0	0
Heavy Vehicles (%)	3%	6%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	20.6	20.6						11.4				
Effective Green, g (s)	21.6	21.6						12.4				
Actuated g/C Ratio	0.51	0.51						0.30				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	901	1661						1032				
v/s Ratio Prot		c0.31						c0.13				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.60						0.44				
Uniform Delay, d1	5.1	7.2						12.0				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.6						0.3				
Delay (s)	5.1	7.8						12.3				
Level of Service	A	A						B				
Approach Delay (s)		7.5			0.0			12.3			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1126	70	0	0	0	0	27	171	41	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2840	1300					1575	1504		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.75	
Satd. Flow (perm)		2840	1300					1575	1504		1395	
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)	18	1211	75	0	0	0	0	29	184	44	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	40	40	0	0	0
Lane Group Flow (vph)	0	1229	66	0	0	0	0	68	65	0	78	0
Heavy Vehicles (%)	6%	8%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.1	53.1					7.9	7.9		7.9	
Effective Green, g (s)		53.6	53.6					8.4	8.4		8.4	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2175	995					189	180		167	
v/s Ratio Prot		c0.43						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.57	0.07					0.36	0.36		0.47	
Uniform Delay, d1		3.4	2.0					28.3	28.3		28.7	
Progression Factor		0.31	0.34					1.00	1.00		1.00	
Incremental Delay, d2		1.0	0.1					1.2	1.2		2.1	
Delay (s)		2.0	0.8					29.5	29.5		30.8	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.9			0.0			29.5			30.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1097	24	0	0	0	0	12	86	7	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2832						1314			1462	
Flt Permitted		1.00						1.00			0.87	
Satd. Flow (perm)		2832						1314			1297	
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)	24	1155	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	48	0	0	0	0
Lane Group Flow (vph)	0	1203	0	0	0	0	0	56	0	0	18	0
Heavy Vehicles (%)	6%	8%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.5						7.5			7.5	
Effective Green, g (s)		54.5						7.5			7.5	
Actuated g/C Ratio		0.78						0.11			0.11	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2205						141			139	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.42									0.01	
v/c Ratio		0.55						0.40			0.13	
Uniform Delay, d1		3.0						29.1			28.3	
Progression Factor		0.36						1.00			1.00	
Incremental Delay, d2		0.6						1.8			0.4	
Delay (s)		1.7						31.0			28.7	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			31.0			28.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	956	16	0	0	0	0	0	29	289	216	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2809							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2809							1289	1681	1405	
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)	0	1006	17	0	0	0	0	0	31	304	227	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	175	10	0
Lane Group Flow (vph)	0	1021	0	0	0	0	0	0	4	86	260	0
Heavy Vehicles (%)	2%	9%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		29.1							9.5	17.9	17.9	
Effective Green, g (s)		29.6							10.0	18.4	18.4	
Actuated g/C Ratio		0.42							0.14	0.26	0.26	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1188							184	442	369	
v/s Ratio Prot		c0.36							c0.00	0.05	c0.19	
v/s Ratio Perm												
v/c Ratio		0.86							0.02	0.20	0.71	
Uniform Delay, d1		18.3							25.8	20.0	23.3	
Progression Factor		1.10							1.00	1.00	1.00	
Incremental Delay, d2		7.5							0.2	1.0	10.8	
Delay (s)		27.6							26.0	21.0	34.2	
Level of Service		C							C	C	C	
Approach Delay (s)		27.6			0.0			26.0			27.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	433	12	0	0	0	0	45	25	460	47	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2733						1418		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2733						1418		1681	1360	
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)	7	461	13	0	0	0	0	48	27	489	50	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	479	0	0	0	0	0	51	0	269	270	0
Heavy Vehicles (%)	6%	12%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		19.9						6.9		29.7	29.7	
Effective Green, g (s)		20.4						7.4		30.2	30.2	
Actuated g/C Ratio		0.29						0.11		0.43	0.43	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		796						150		725	587	
v/s Ratio Prot								c0.04		0.16	c0.20	
v/s Ratio Perm		0.18										
v/c Ratio		0.60						0.34		0.37	0.46	
Uniform Delay, d1		21.3						29.0		13.5	14.1	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.3						1.3		1.5	2.6	
Delay (s)		22.6						30.4		14.9	16.7	
Level of Service		C						C		B	B	
Approach Delay (s)		22.6			0.0			30.4			15.8	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	359	0	567	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1678		2031		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1678		2031		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	399	0	630	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	399	0	630	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	11%	2%	6%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		30.5		30.5		
Effective Green, g (s)		30.5		30.5		
Actuated g/C Ratio		0.75		0.75		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1264		1530		
v/s Ratio Prot		0.24		c0.31		
v/s Ratio Perm						
v/c Ratio		0.32		0.41		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.2		
Delay (s)		1.8		2.0		
Level of Service		A		A		
Approach Delay (s)	1.8			2.0	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	40.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	944	22	18	163	0	0	90	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3395			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3395			3044			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	983	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	68	0
Lane Group Flow (vph)	0	0	0	0	1019	0	0	189	0	0	279	0
Heavy Vehicles (%)	2%	2%	2%	3%	6%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					48.8			12.2			12.2	
Effective Green, g (s)					49.3			12.7			12.7	
Actuated g/C Ratio					0.70			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2391			552			543	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.30			0.06				
v/c Ratio					0.43			0.34			0.51	
Uniform Delay, d1					4.4			25.0			25.9	
Progression Factor					1.13			1.03			1.00	
Incremental Delay, d2					0.5			0.3			0.8	
Delay (s)					5.4			26.2			26.7	
Level of Service					A			C			C	
Approach Delay (s)		0.0			5.4			26.2			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1246	19	13	381	0	0	51	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
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3290			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3290			1679			1710	1615
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)	0	0	0	15	1326	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	44
Lane Group Flow (vph)	0	0	0	0	1359	0	0	419	0	0	54	246
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2021			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.41			c0.25				0.15
v/c Ratio					0.67			0.92			0.12	0.56
Uniform Delay, d1					8.9			24.8			19.2	21.9
Progression Factor					0.69			1.00			1.00	1.00
Incremental Delay, d2					1.7			26.1			0.5	5.1
Delay (s)					7.9			50.8			19.7	27.0
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.9			50.8			25.9	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1170	92	32	68	0	0	211	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3500	1554		1815			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3500	1554		1550			1794	
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)	0	0	0	46	1232	97	34	72	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1278	55	0	106	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	3%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					30.6	30.6		15.0			15.0	
Effective Green, g (s)					30.6	30.6		15.0			15.0	
Actuated g/C Ratio					0.57	0.57		0.28			0.28	
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)					1998	887		434			502	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.37	0.04		0.07				
v/c Ratio					0.64	0.06		0.24			0.60	
Uniform Delay, d1					7.8	5.1		14.9			16.7	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.7	0.0		0.3			1.9	
Delay (s)					8.5	5.1		15.2			18.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.2			15.2			18.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1330	5	18	7	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.96			1.00	
Satd. Flow (prot)					3262			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3262			1676			1777	
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)	0	0	0	35	1415	5	19	7	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1455	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	5%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.9			1.3			1.3	
Effective Green, g (s)					30.4			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2467			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.45			c0.02				
v/c Ratio					0.59			0.35			0.29	
Uniform Delay, d1					2.2			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.4			2.8			2.0	
Delay (s)					2.5			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.5			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	42	1221	12	52	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	46	1342	13	57	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1355			0			785	1447	0	1448	1441	677
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1355			0			785	1447	0	1448	1441	677
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			76	89	100	100	85	97
cM capacity (veh/h)	504			1622			237	127	1084	84	130	400

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	717	684	71	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	202	175
Volume to Capacity	0.03	0.40	0.35	0.18
Queue Length 95th (ft)	2	0	38	16
Control Delay (s)	0.8	0.0	32.3	30.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		32.3	30.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1209	2	471	23	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3297		1618	1630				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3297		1618	1630				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1358	2	529	26	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	156	156	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1360	0	119	124	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.3		10.1	10.1				0.7
Effective Green, g (s)					29.3		11.1	11.1				1.7
Actuated g/C Ratio					0.54		0.21	0.21				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1786		332	334				51
v/s Ratio Prot					c0.41							
v/s Ratio Perm							0.07	0.08				c0.00
v/c Ratio					0.76		0.36	0.37				0.00
Uniform Delay, d1					9.7		18.4	18.5				25.4
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					2.0		0.7	0.7				0.0
Delay (s)					11.6		19.1	19.2				25.4
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.6			19.2			25.4	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1272	184	0	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1339	194	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1339				1339	669
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1339				1339	669
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	77
cM capacity (veh/h)	511				142	395

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	669	669	194	89
Volume Left	0	0	0	0
Volume Right	0	0	194	89
cSH	1700	1700	1700	395
Volume to Capacity	0.39	0.39	0.11	0.23
Queue Length 95th (ft)	0	0	0	21
Control Delay (s)	0.0	0.0	0.0	16.8
Lane LOS				C
Approach Delay (s)	0.0			16.8
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	474	1116	0	0	8	98	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	489	1151	0	0	8	101	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			489	489	489	1639	1639	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			489	489	489	1639	1639	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	0	100	
cM capacity (veh/h)			480	579	490	100	395	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	872	767	8	101
Volume Left	0	0	8	0
Volume Right	384	767	0	0
cSH	1700	1700	490	100
Volume to Capacity	0.51	0.45	0.02	1.01
Queue Length 95th (ft)	0	0	1	155
Control Delay (s)	0.0	0.0	12.5	170.1
Lane LOS			B	F
Approach Delay (s)	0.0		158.2	
Approach LOS			F	

Intersection Summary			
Average Delay	9.9		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	52	0	0	1236	0	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3438		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3438		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	0	0	1343	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	0	0	1343	0	508
Heavy Vehicles (%)	2%	2%	3%	5%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.4			48.1		70.5
Effective Green, g (s)	13.9			48.6		70.5
Actuated g/C Ratio	0.20			0.69		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	349			2370		2787
v/s Ratio Prot	0.03			c0.39		
v/s Ratio Perm						c0.18
v/c Ratio	0.16			0.57		0.18
Uniform Delay, d1	23.5			5.6		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	23.6			6.5		0.1
Level of Service	C			A		A
Approach Delay (s)	23.6			6.5	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	4.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	659	577	467	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1631	1845	3467	
Flt Permitted			0.38	1.00	1.00	
Satd. Flow (perm)			658	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	686	601	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	686	601	518	0
Heavy Vehicles (%)	2%	2%	7%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			51.2	55.7	25.0	
Effective Green, g (s)			52.2	56.2	25.5	
Actuated g/C Ratio			0.74	0.80	0.36	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			856	1471	1254	
v/s Ratio Prot			c0.30	0.33	0.15	
v/s Ratio Perm			c0.29			
v/c Ratio			0.80	0.41	0.41	
Uniform Delay, d1			5.5	2.2	16.9	
Progression Factor			0.63	0.08	1.00	
Incremental Delay, d2			4.5	0.7	0.1	
Delay (s)			7.9	0.8	17.0	
Level of Service			A	A	B	
Approach Delay (s)	0.0			4.6	17.0	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	18.3
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	966	222	0	0	0	22	0	566	152	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.97				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2704				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2704				
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)	1039	239	0	0	0	24	0	609	163	0	0	0
RTOR Reduction (vph)	344	88	0	0	0	23	0	25	0	0	0	0
Lane Group Flow (vph)	290	556	0	0	0	1	0	747	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	8%	17%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	25.7	25.7				2.5		29.8				
Effective Green, g (s)	26.2	26.2				1.5		30.3				
Actuated g/C Ratio	0.37	0.37				0.02		0.43				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	606	622				27		1170				
v/s Ratio Prot								c0.28				
v/s Ratio Perm	0.18	0.33				c0.00						
v/c Ratio	0.48	0.89				0.02		0.64				
Uniform Delay, d1	16.7	20.6				33.5		15.6				
Progression Factor	1.33	0.37				1.00		1.00				
Incremental Delay, d2	1.7	12.4				0.1		1.2				
Delay (s)	23.9	20.0				33.6		16.7				
Level of Service	C	C				C		B				
Approach Delay (s)		21.9			33.6			16.7			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	22	0	0	169	18	53	1508	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1644			4933				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1271			1644			4933				
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)	17	23	0	0	178	19	56	1587	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	40	0	0	191	0	0	1649	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	15%	5%	3%	5%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		13.6			13.6			47.4				
Effective Green, g (s)		14.1			14.1			47.9				
Actuated g/C Ratio		0.20			0.20			0.68				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		256			331			3376				
v/s Ratio Prot					c0.12							
v/s Ratio Perm		0.03						0.33				
v/c Ratio		0.16			0.58			0.49				
Uniform Delay, d1		23.0			25.3			5.2				
Progression Factor		1.06			1.00			0.91				
Incremental Delay, d2		0.3			2.4			0.4				
Delay (s)		24.7			27.7			5.1				
Level of Service		C			C			A				
Approach Delay (s)		24.7			27.7			5.1			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	92	147	0	0	91	116	72	1548	105	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1722	1504		4522				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1236			1722	1504		4522				
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)	97	155	0	0	96	122	76	1629	111	0	0	0
RTOR Reduction (vph)	0	0	0	0	12	19	0	9	0	0	0	0
Lane Group Flow (vph)	0	252	0	0	105	82	0	1807	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	6%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.5			17.5	17.5		44.0				
Effective Green, g (s)		18.0			18.0	18.0		44.0				
Actuated g/C Ratio		0.26			0.26	0.26		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		318			443	387		2842				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.40				
v/c Ratio		0.79			0.24	0.21		0.64				
Uniform Delay, d1		24.3			20.6	20.4		8.0				
Progression Factor		0.95			1.00	1.00		2.12				
Incremental Delay, d2		12.0			0.3	0.3		1.0				
Delay (s)		35.0			20.8	20.7		18.1				
Level of Service		C			C	C		B				
Approach Delay (s)		35.0			20.8			18.1			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
307: S "K" Street & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	78	31	0	0	73	32	28	1543	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1786			4382				
Flt Permitted		0.70			1.00			1.00				
Satd. Flow (perm)		1310			1786			4382				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	90	36	0	0	84	37	32	1774	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	126	0	0	106	0	0	1855	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.7			11.7			49.8				
Effective Green, g (s)		12.2			12.2			49.8				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		228			311			3117				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.10						0.42				
v/c Ratio		0.55			0.34			0.60				
Uniform Delay, d1		26.4			25.4			5.1				
Progression Factor		1.61			1.00			0.25				
Incremental Delay, d2		2.8			0.7			0.7				
Delay (s)		45.3			26.0			1.9				
Level of Service		D			C			A				
Approach Delay (s)		45.3			26.0			1.9			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	238	26	0	0	32	18	62	1714	22	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4391				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1057			1418			4391				
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)	253	28	0	0	34	19	66	1823	23	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	281	0	0	44	0	0	1910	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.7			20.7			39.3				
Effective Green, g (s)		21.2			21.2			40.8				
Actuated g/C Ratio		0.30			0.30			0.58				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		320			429			2559				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.27						0.44				
v/c Ratio		0.88			0.10			0.75				
Uniform Delay, d1		23.2			17.6			10.8				
Progression Factor		0.68			1.00			0.62				
Incremental Delay, d2		22.3			0.1			1.7				
Delay (s)		38.0			17.7			8.4				
Level of Service		D			B			A				
Approach Delay (s)		38.0			17.7			8.4			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	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 Signalized Intersection Capacity Analysis
309: S "I" Street & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	54	15	0	0	8	10	23	1685	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.93			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1380			4395				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1132			1380			4395				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	61	17	0	0	9	11	26	1915	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	78	0	0	10	0	0	1958	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		150			183			3309				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.45				
v/c Ratio		0.52			0.06			0.59				
Uniform Delay, d1		28.3			26.5			3.9				
Progression Factor		0.82			1.00			0.25				
Incremental Delay, d2		3.1			0.1			0.5				
Delay (s)		26.3			26.7			1.5				
Level of Service		C			C			A				
Approach Delay (s)		26.3			26.7			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	57	38	35	36	0	0	0	0	17	1391	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4426	
Flt Permitted		1.00			0.79						1.00	
Satd. Flow (perm)		1410			1184						4426	
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)	0	63	42	39	40	0	0	0	0	19	1546	41
RTOR Reduction (vph)	0	28	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	77	0	0	79	0	0	0	0	0	1604	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.9	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		183			154						3345	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.07						0.36	
v/c Ratio		0.42			0.51						0.48	
Uniform Delay, d1		28.0			28.4						3.3	
Progression Factor		1.00			0.96						0.68	
Incremental Delay, d2		1.6			2.8						0.5	
Delay (s)		29.6			30.1						2.7	
Level of Service		C			C						A	
Approach Delay (s)		29.6			30.1			0.0			2.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	148	44	25	76	0	0	0	0	9	1247	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1444			1472						4405	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1444			1329						4405	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	161	48	27	83	0	0	0	0	10	1355	86
RTOR Reduction (vph)	0	18	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	191	0	0	110	0	0	0	0	0	1444	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		14.4			14.4						45.6	
Effective Green, g (s)		14.9			14.9						47.1	
Actuated g/C Ratio		0.21			0.21						0.67	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		307			283						2964	
v/s Ratio Prot		c0.13										
v/s Ratio Perm					0.08						0.33	
v/c Ratio		0.62			0.39						0.49	
Uniform Delay, d1		25.0			23.6						5.6	
Progression Factor		1.00			0.94						0.27	
Incremental Delay, d2		3.9			0.8						0.5	
Delay (s)		28.9			23.0						2.0	
Level of Service		C			C						A	
Approach Delay (s)		28.9			23.0			0.0			2.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
312: S "K" Street & W Wishkah Street #1011

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	77	21	16	45	0	0	0	0	19	1270	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1447			1471						4430	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1447			1340						4430	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	84	23	17	49	0	0	0	0	21	1380	28
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	90	0	0	66	0	0	0	0	0	1427	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.9	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		188			174						3348	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.32	
v/c Ratio		0.48			0.38						0.43	
Uniform Delay, d1		28.2			27.9						3.1	
Progression Factor		1.00			0.51						0.23	
Incremental Delay, d2		1.9			1.3						0.4	
Delay (s)		30.1			15.7						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.1			15.7			0.0			1.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	106	23	66	93	0	0	0	0	133	1131	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						0.99	
Satd. Flow (prot)		1822			1825						4570	
Flt Permitted		1.00			0.83						0.99	
Satd. Flow (perm)		1822			1553						4570	
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)	0	112	24	69	98	0	0	0	0	140	1191	33
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	125	0	0	167	0	0	0	0	0	1360	0
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		534			455						2709	
v/s Ratio Prot		0.07										
v/s Ratio Perm					c0.11						0.30	
v/c Ratio		0.23			0.37						0.50	
Uniform Delay, d1		18.8			19.6						8.3	
Progression Factor		1.00			0.97						0.83	
Incremental Delay, d2		1.0			2.1						0.6	
Delay (s)		19.8			21.2						7.5	
Level of Service		B			C						A	
Approach Delay (s)		19.8			21.2			0.0			7.5	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	36	173	0	0	0	0	22	430	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.93	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1347						2531	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1347						2531	1400
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)	0	0	0	38	184	0	0	0	0	23	457	830
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	144	152
Lane Group Flow (vph)	0	0	0	0	222	0	0	0	0	0	751	263
Heavy Vehicles (%)	2%	2%	2%	50%	4%	2%	2%	2%	2%	0%	11%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					17.1						43.9	43.9
Effective Green, g (s)					17.6						44.4	44.4
Actuated g/C Ratio					0.25						0.63	0.63
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					339						1605	888
v/s Ratio Prot												
v/s Ratio Perm					0.16						0.30	0.19
v/c Ratio					0.65						0.47	0.30
Uniform Delay, d1					23.5						6.7	5.8
Progression Factor					0.83						0.52	0.19
Incremental Delay, d2					4.3						0.9	0.8
Delay (s)					23.9						4.3	1.9
Level of Service					C						A	A
Approach Delay (s)		0.0			23.9			0.0			3.6	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1131	31	0	0	0	0	0	0	19	425	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3109									2655	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3109									2655	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1300	36	0	0	0	0	0	0	22	489	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	1334	0	0	0	0	0	0	0	0	505	0
Heavy Vehicles (%)	0%	4%	7%	2%	2%	2%	2%	2%	2%	0%	16%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		39.1									21.9	
Effective Green, g (s)		39.6									22.4	
Actuated g/C Ratio		0.57									0.32	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1759									850	
v/s Ratio Prot		c0.43										
v/s Ratio Perm											0.19	
v/c Ratio		0.76									0.59	
Uniform Delay, d1		11.6									20.0	
Progression Factor		0.78									1.43	
Incremental Delay, d2		2.7									1.0	
Delay (s)		11.7									29.6	
Level of Service		B									C	
Approach Delay (s)		11.7			0.0			0.0			29.6	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	120	670	0	0	0	0	0	1522	419	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1242			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1242			
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)	126	705	0	0	0	0	0	1602	441	0	0	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	36	0	0	0
Lane Group Flow (vph)	0	821	0	0	0	0	0	1602	405	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	4%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		19.4						42.1	42.1			
Effective Green, g (s)		19.4						42.6	42.6			
Actuated g/C Ratio		0.28						0.61	0.61			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1268						1865	756			
v/s Ratio Prot								c0.52				
v/s Ratio Perm		0.18							0.33			
v/c Ratio		0.65						0.86	0.54			
Uniform Delay, d1		22.3						11.2	8.0			
Progression Factor		0.89						1.81	2.02			
Incremental Delay, d2		1.1						4.6	2.3			
Delay (s)		20.8						25.0	18.4			
Level of Service		C						C	B			
Approach Delay (s)		20.8			0.0			23.6			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	579	419	81	1464	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3258			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3258			2943				
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)	0	0	0	0	597	432	84	1509	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1013	0	0	1587	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					23.7			37.3				
Effective Green, g (s)					24.2			37.8				
Actuated g/C Ratio					0.35			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1126			1589				
v/s Ratio Prot					c0.31							
v/s Ratio Perm								0.54				
v/c Ratio					0.90			1.00				
Uniform Delay, d1					21.7			16.1				
Progression Factor					1.00			0.79				
Incremental Delay, d2					9.7			16.2				
Delay (s)					31.5			29.0				
Level of Service					C			C				
Approach Delay (s)		0.0			31.5			29.0			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	275	46	0	0	0	0	0	0	373	1188	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2944									4394	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2944									4394	
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)	0	296	49	0	0	0	0	0	0	401	1277	0
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	0	0	55	0
Lane Group Flow (vph)	0	322	0	0	0	0	0	0	0	0	1623	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.9									48.1	
Effective Green, g (s)		13.4									48.6	
Actuated g/C Ratio		0.19									0.69	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		564									3051	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.37	
v/c Ratio		0.57									0.53	
Uniform Delay, d1		25.7									5.2	
Progression Factor		1.00									0.63	
Incremental Delay, d2		1.4									0.6	
Delay (s)		27.1									3.9	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			3.9	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	345	305	0	0	0	0	0	1330	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.98						1.00	
Satd. Flow (prot)				1264	3275						4415	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1264	3275						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	375	332	0	0	0	0	0	1446	70
RTOR Reduction (vph)	0	0	0	21	21	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	208	457	0	0	0	0	0	1510	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				17.5	17.5						43.5	
Effective Green, g (s)				18.0	18.0						44.0	
Actuated g/C Ratio				0.26	0.26						0.63	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				325	842						2775	
v/s Ratio Prot				c0.16	0.14						c0.34	
v/s Ratio Perm												
v/c Ratio				0.64	0.54						0.54	
Uniform Delay, d1				23.1	22.4						7.3	
Progression Factor				1.15	1.21						1.00	
Incremental Delay, d2				2.0	0.3						0.8	
Delay (s)				28.6	27.5						8.1	
Level of Service				C	C						A	
Approach Delay (s)		0.0			27.9			0.0			8.1	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
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)	15	1289	37	28	1076	2	356	9	18	17	4	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.96	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3342		1681	1673			1743	
Flt Permitted		0.93		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3088		1727	3342		1681	1673			1743	
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)	18	1516	44	33	1266	2	419	11	21	20	5	11
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	10	0
Lane Group Flow (vph)	0	1577	0	33	1268	0	226	222	0	0	26	0
Heavy Vehicles (%)	2%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	1%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.1		5.4	80.5		17.4	17.4			5.1	
Effective Green, g (s)		72.1		5.4	81.5		18.4	18.4			6.1	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1887		79	2308		262	261			90	
v/s Ratio Prot				0.02	c0.38		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.51										
v/c Ratio		0.84		0.42	0.55		0.86	0.85			0.28	
Uniform Delay, d1		18.2		54.8	9.1		48.6	48.4			53.8	
Progression Factor		1.00		1.03	0.58		1.00	1.00			1.00	
Incremental Delay, d2		4.6		2.8	0.7		24.1	21.8			1.7	
Delay (s)		22.8		59.1	6.1		72.7	70.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		22.8			7.4			71.5			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	1632	104	54	1129	0	220	9	111	52	19	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3313		1727	3343		1665	1553			1750	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3313		1727	3343		1665	1553			1750	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	27	1700	108	56	1176	0	229	9	116	54	20	26
RTOR Reduction (vph)	0	3	0	0	0	0	0	64	0	0	12	0
Lane Group Flow (vph)	27	1805	0	56	1176	0	183	107	0	0	88	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.0		7.7	66.1		14.6	14.6			11.7	
Effective Green, g (s)	6.6	66.0		7.7	67.1		15.6	15.6			12.7	
Actuated g/C Ratio	0.06	0.56		0.07	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1853		113	1901		220	205			188	
v/s Ratio Prot	0.02	c0.54		0.03	c0.35		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.28	0.97		0.50	0.62		0.83	0.52			0.47	
Uniform Delay, d1	53.4	25.2		53.3	16.9		49.9	47.7			49.5	
Progression Factor	0.80	0.63		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	12.8		2.5	1.5		23.2	2.7			2.1	
Delay (s)	43.5	28.7		55.8	18.5		73.1	50.4			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		28.9			20.2			62.1			51.6	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM Average Control Delay	29.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	823	3	533	760	0	319
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.94	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3442		3145	1616		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3442		3145	1616		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1016	4	658	938	0	394
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1020	0	1089	507	0	394
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	29.8		33.1	74.9		33.1
Effective Green, g (s)	31.8		35.1	74.9		35.1
Actuated g/C Ratio	0.42		0.47	1.00		0.47
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1461		1474	1616		1245
v/s Ratio Prot	c0.30		c0.35	0.31		0.15
v/s Ratio Perm						
v/c Ratio	0.70		0.74	0.31		0.32
Uniform Delay, d1	17.6		16.2	0.0		12.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	1.4		1.9	0.5		0.1
Delay (s)	19.0		18.0	0.5		12.5
Level of Service	B		B	A		B
Approach Delay (s)	19.0		12.5		12.5	
Approach LOS	B		B		B	

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	74.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	21	0	0	9	19	647	1	3	346	56
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	22	0	0	9	20	681	1	3	364	59
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1138	1129	401	1116	1158	684	429			683		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1138	1129	401	1116	1158	684	429			683		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	172	200	649	176	192	452	1129			909		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	22	9	13	689	3	423
Volume Left	0	0	13	7	3	0
Volume Right	22	9	0	1	0	59
cSH	649	452	1129	1129	909	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.25
Queue Length 95th (ft)	3	2	1	1	0	0
Control Delay (s)	10.7	13.1	8.2	0.3	9.0	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.1	0.5		0.1	
Approach LOS	B	B				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	25	1	10	0	2	4	14	602	2	2	298	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	27	1	11	0	2	4	15	647	2	2	320	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1023	1020	336	1015	1034	648	352			649		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1023	1020	336	1015	1034	648	352			649		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	100	98	100	99	99	99			100		
cM capacity (veh/h)	209	234	708	211	230	472	1213			937		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	39	6	15	649	2	352
Volume Left	27	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	261	349	1213	1700	937	1700
Volume to Capacity	0.15	0.02	0.01	0.38	0.00	0.21
Queue Length 95th (ft)	13	1	1	0	0	0
Control Delay (s)	21.2	15.5	8.0	0.0	8.9	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	21.2	15.5	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	10	400	2	2	226	168
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	11	460	2	2	260	193
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	851	846	356	752	941	461	453			462		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	851	846	356	752	941	461	453			462		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	92	100	100	100	98	99	99			100		
cM capacity (veh/h)	273	298	692	311	251	582	1118			1110		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	11	462	2	453
Volume Left	22	0	11	0	2	0
Volume Right	3	5	0	2	0	193
cSH	297	336	1118	1700	1110	1700
Volume to Capacity	0.09	0.03	0.01	0.27	0.00	0.27
Queue Length 95th (ft)	7	2	1	0	0	0
Control Delay (s)	18.2	16.1	8.3	0.0	8.3	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	18.2	16.1	0.2		0.0	
Approach LOS	C	C				

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	36.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	378	37	0	0	0	1	91	1	2	232	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	398	39	0	0	0	1	96	1	2	244	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			437			554	417	417	466	437	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			437			554	417	417	466	437	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	82	100	100	52	99
cM capacity (veh/h)	1604			1134			275	528	638	435	513	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	437	0	98	261
Volume Left	0	0	1	2
Volume Right	39	0	1	15
cSH	1604	1700	524	528
Volume to Capacity	0.00	0.00	0.19	0.49
Queue Length 95th (ft)	0	0	17	68
Control Delay (s)	0.0	0.0	13.4	18.3
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.4	18.3
Approach LOS			B	C

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	613	1	3	626	9	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	659	1	3	673	10	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			660		1339	660
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			660		1339	660
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		93	99
cM capacity (veh/h)			900		133	389

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	660	676	12
Volume Left	0	3	10
Volume Right	1	0	2
cSH	1700	900	151
Volume to Capacity	0.39	0.00	0.08
Queue Length 95th (ft)	0	0	6
Control Delay (s)	0.0	0.1	30.8
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	30.8
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	561	45	107	539	10	113	1	263	9	2	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	610	49	116	586	11	123	1	286	10	2	9
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	598			662			1492	1487	639	1767	1506	593
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	598			662			1492	1487	639	1767	1506	593
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			88			0	99	40	57	98	98
cM capacity (veh/h)	964			934			89	108	477	23	102	497

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	668	713	410	21
Volume Left	10	116	123	10
Volume Right	49	11	286	9
cSH	964	934	206	44
Volume to Capacity	0.01	0.12	1.99	0.47
Queue Length 95th (ft)	1	11	764	42
Control Delay (s)	0.3	3.0	502.3	145.7
Lane LOS	A	A	F	F
Approach Delay (s)	0.3	3.0	502.3	145.7
Approach LOS			F	F

Intersection Summary				
Average Delay		116.5		
Intersection Capacity Utilization		102.9%	ICU Level of Service	G
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	827	1	1	639	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	899	1	1	695	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	696			900			1600	1599	899	1600	1599	695
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	696			900			1600	1599	899	1600	1599	695
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	99	100	100
cM capacity (veh/h)	886			742			85	106	337	85	106	442

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	901	697	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	886	742	136	143
Volume to Capacity	0.00	0.00	0.02	0.02
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	31.9	30.6
Lane LOS	A	A	D	D
Approach Delay (s)	0.0	0.0	31.9	30.6
Approach LOS			D	D

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	740	35	13	582	11	6	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	52	813	38	14	640	12	7	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	654			852			1646	1618	834	1617	1631	649
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	654			852			1646	1618	834	1617	1631	649
tC, single (s)	4.1			4.4			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.5			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			98			90	98	99	75	99	93
cM capacity (veh/h)	917			680			69	96	370	76	94	468

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	903	666	11	54
Volume Left	52	14	7	19
Volume Right	38	12	2	34
cSH	917	680	89	163
Volume to Capacity	0.06	0.02	0.12	0.33
Queue Length 95th (ft)	4	2	10	34
Control Delay (s)	1.5	0.6	51.2	37.6
Lane LOS	A	A	F	E
Approach Delay (s)	1.5	0.6	51.2	37.6
Approach LOS			F	E

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	760	0	0	27	606
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	826	0	0	29	659
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			717	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			717	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			389	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	826	29	659
Volume Left	0	29	0
Volume Right	826	0	0
cSH	1700	1578	1700
Volume to Capacity	0.49	0.02	0.39
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	773	5	0	19	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	849	5	0	21	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1702	1702	1704	0
vC1, stage 1 conf vol			1702	1702	0	
vC2, stage 2 conf vol			0	0	1704	
vCu, unblocked vol	0		1702	1702	1704	0
tC, single (s)	4.1		7.1	6.7	6.5	6.2
tC, 2 stage (s)			6.1	5.7	5.5	
tF (s)	2.2		3.5	4.1	4.0	3.3
p0 queue free %	47		100	48	100	100
cM capacity (veh/h)	1604		50	40	62	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	566	289	21
Volume Left	566	283	0
Volume Right	0	5	0
cSH	1604	1604	40
Volume to Capacity	0.53	0.53	0.52
Queue Length 95th (ft)	82	82	46
Control Delay (s)	9.7	9.7	168.3
Lane LOS	A	A	F
Approach Delay (s)	9.7		168.3
Approach LOS			F

Intersection Summary			
Average Delay	13.5		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	22	3	0	0	172	8	12	768	21	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	25	3	0	0	195	9	14	873	24	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	570	924	0	914	912	448	0			897		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570	924	0	914	912	448	0			897		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	99	100	100	28	98	99			100		
cM capacity (veh/h)	166	269	1091	226	272	561	1600			753		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	28	205	450	460
Volume Left	25	0	14	0
Volume Right	0	9	0	24
cSH	174	278	1600	1700
Volume to Capacity	0.16	0.74	0.01	0.27
Queue Length 95th (ft)	14	132	1	0
Control Delay (s)	29.7	46.9	0.3	0.0
Lane LOS	D	E	A	
Approach Delay (s)	29.7	46.9	0.1	
Approach LOS	D	E		

Intersection Summary				
Average Delay		9.2		
Intersection Capacity Utilization		45.1%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	8	6	0	0	16	2	5	782	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	8	6	0	0	17	2	5	815	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	428	830	2	833	828	410	0			820		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	428	830	2	833	828	410	0			820		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	95	100	100			100		
cM capacity (veh/h)	491	307	1086	260	308	597	1593			805		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	15	19	412	412
Volume Left	8	0	5	0
Volume Right	0	2	0	5
cSH	391	325	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.24
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	14.6	16.7	0.1	0.0
Lane LOS	B	C	A	
Approach Delay (s)	14.6	16.7	0.1	
Approach LOS	B	C		

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		36.4%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	92	9	38	727	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	107	10	44	845	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	578	948	4	946	944	430	3			856		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	578	948	4	946	944	430	3			856		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	95	97	100	100	52	98	97			100		
cM capacity (veh/h)	217	223	1019	181	224	524	1599			777		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	117	467	430
Volume Left	12	0	44	0
Volume Right	0	10	0	7
cSH	219	236	1599	1700
Volume to Capacity	0.09	0.50	0.03	0.25
Queue Length 95th (ft)	7	63	2	0
Control Delay (s)	23.0	34.5	0.9	0.0
Lane LOS	C	D	A	
Approach Delay (s)	23.0	34.5	0.5	
Approach LOS	C	D		

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
359: N Washington Street & W Wishkah Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	11	86	42	0	0	0	0	3	441	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	13	102	50	0	0	0	0	4	525	11
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.90	0.90	0.90	0.90	0.90		0.90					
vC, conflicting volume	566	548	271	297	553	7	539			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	280	260	0	0	266	7	250			7		
tC, single (s)	7.8	6.8	7.0	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.3	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	99	88	91	100	100			100		
cM capacity (veh/h)	510	544	963	864	564	1055	1172			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	27	152	266	273
Volume Left	0	102	4	0
Volume Right	13	0	0	11
cSH	687	735	1541	1700
Volume to Capacity	0.04	0.21	0.00	0.16
Queue Length 95th (ft)	3	19	0	0
Control Delay (s)	10.5	11.2	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	10.5	11.2	0.1	
Approach LOS	B	B		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	510	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	548	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	585	577	283	307	584	4	561			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	585	577	283	307	584	4	561			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	386	427	720	607	423	1080	1006			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	285	287
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	453	516	1576	1700
Volume to Capacity	0.03	0.06	0.01	0.17
Queue Length 95th (ft)	3	4	1	0
Control Delay (s)	13.2	12.4	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.2	12.4	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.1		
Intersection Capacity Utilization		33.4%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	464	66	0	30	1	123	42	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	494	70	0	32	1	131	45	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	564			0			579	556	284	293	591	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	564			0			579	556	284	293	591	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	93	100	78	89	100
cM capacity (veh/h)	1004			1565			367	438	719	598	416	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	261	317	33	176
Volume Left	14	0	0	131
Volume Right	0	70	1	0
cSH	1565	1700	444	538
Volume to Capacity	0.01	0.19	0.07	0.33
Queue Length 95th (ft)	1	0	6	35
Control Delay (s)	0.5	0.0	13.8	14.9
Lane LOS	A		B	B
Approach Delay (s)	0.2		13.8	14.9
Approach LOS			B	B

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
362: S Division Street & W Heron Street

8/19/2009

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	3	0	3	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	3	0	3	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	52			29			71	80	51	73	73	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	52			29			71	80	51	73	73	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	100	100	99	100	100
cM capacity (veh/h)	1554			1584			925	656	1023	900	806	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	52	3	5
Volume Left	0	0	0	5
Volume Right	17	3	0	0
cSH	1554	1584	656	900
Volume to Capacity	0.00	0.00	0.00	0.01
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	10.5	9.0
Lane LOS			B	A
Approach Delay (s)	0.0	0.0	10.5	9.0
Approach LOS			B	A

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	14.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	10	47	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	11	51	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	65	52	52			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	65	52	52			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	940	1016	1567			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	52
Volume Left	1	1	0
Volume Right	1	0	1
cSH	977	1567	1700
Volume to Capacity	0.00	0.00	0.03
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.7	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
371: Port Industrial Road & W 1st Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	35	445	4	4	559	6	16	3	5	5	0	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	40	511	5	5	643	7	18	3	6	6	0	49
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	643			516			1295	1246	514	1255	1252	646
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	643			516			1295	1246	514	1255	1252	646
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			84	98	99	96	100	89
cM capacity (veh/h)	901			1060			114	159	543	133	157	456

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	40	516	5	649	28	55
Volume Left	40	0	5	0	18	6
Volume Right	0	5	0	7	6	49
cSH	901	1700	1060	1700	143	364
Volume to Capacity	0.04	0.30	0.00	0.38	0.19	0.15
Queue Length 95th (ft)	4	0	0	0	17	13
Control Delay (s)	9.2	0.0	8.4	0.0	36.1	16.6
Lane LOS	A		A		E	C
Approach Delay (s)	0.7		0.1		36.1	16.6
Approach LOS					E	C

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
372: Port Industrial Road & Myrtle Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	377	10	15	490	119	9	14	39	61	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	410	11	16	533	129	10	15	42	66	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			421			1115	1147	415	1132	1088	597
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			421			1115	1147	415	1132	1088	597
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			94	92	93	57	97	94
cM capacity (veh/h)	890			1097			157	182	612	154	209	505

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	439	678	67	102
Volume Left	18	16	10	66
Volume Right	11	129	42	29
cSH	890	1097	314	196
Volume to Capacity	0.02	0.01	0.21	0.52
Queue Length 95th (ft)	2	1	20	67
Control Delay (s)	0.6	0.4	19.6	41.8
Lane LOS	A	A	C	E
Approach Delay (s)	0.6	0.4	19.6	41.8
Approach LOS			C	E

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	331	2	4	0	381	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	372	2	4	0	428	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	428			374			404	833	373	454	406	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	428			374			404	833	373	454	406	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	88	95	100	100	100
cM capacity (veh/h)	1105			560			549	299	673	440	525	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	374	4	428	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	428	33
cSH	1105	1700	560	1700	406
Volume to Capacity	0.01	0.22	0.01	0.25	0.17
Queue Length 95th (ft)	1	0	1	0	15
Control Delay (s)	8.3	0.0	11.5	0.0	15.6
Lane LOS	A		B		C
Approach Delay (s)	0.2		0.1		15.6
Approach LOS					C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/19/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	40	0	2	0	0	0	31	51	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	47	0	2	0	0	0	36	60	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		114	96	0	174	95	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		114	96	0	174	95	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	94	100	95	100
cM capacity (veh/h)	1554			1620		805	764	1076	706	774	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	49	0	96	40
Volume Left	47	0	0	2
Volume Right	2	0	60	0
cSH	1554	1700	932	770
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary				
Average Delay		8.8		
Intersection Capacity Utilization		14.8%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	351	4	15	469	31	10	8	25	32	8	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1771			1845			1761	1538		1749	
Flt Permitted		0.98			0.99			0.81	1.00		0.81	
Satd. Flow (perm)		1744			1824			1472	1538		1451	
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)	12	377	4	16	504	33	11	9	27	34	9	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	393	0	0	551	0	0	20	4	0	45	0
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		24.1			24.1			5.6	5.6		5.6	
Effective Green, g (s)		24.6			24.6			6.1	6.1		6.1	
Actuated g/C Ratio		0.64			0.64			0.16	0.16		0.16	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1109			1159			232	242		229	
v/s Ratio Prot												
v/s Ratio Perm		0.23			c0.30			0.01	0.00		c0.03	
v/c Ratio		0.35			0.48			0.09	0.02		0.20	
Uniform Delay, d1		3.3			3.7			13.9	13.8		14.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.2	0.0		0.4	
Delay (s)		3.5			4.0			14.1	13.8		14.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.5			4.0			13.9			14.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	38.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	195	15	2	278	19	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	222	17	2	316	22	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			239		542	222
vC1, stage 1 conf vol					222	
vC2, stage 2 conf vol					320	
vCu, unblocked vol			239		542	222
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		97	100
cM capacity (veh/h)			1334		638	789

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	222	17	2	316	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1334	1700	655
Volume to Capacity	0.13	0.01	0.00	0.19	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.7
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.7
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	24.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	121	1239	11	0	0	0	0	56	25	16	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3343						3237			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3343						3237			3066	
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)	130	1332	12	0	0	0	0	60	27	17	88	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	1474	0	0	0	0	0	63	0	0	105	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2622						328			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.44									c0.03	
v/c Ratio		0.56						0.19			0.34	
Uniform Delay, d1		2.9						28.8			29.3	
Progression Factor		1.00						1.00			0.58	
Incremental Delay, d2		0.9						0.3			0.6	
Delay (s)		3.8						29.1			17.5	
Level of Service		A						C			B	
Approach Delay (s)		3.8			0.0			29.1			17.5	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1204	65	0	0	0	0	81	123	79	83	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3335						1711			1621	
Flt Permitted		1.00						1.00			0.71	
Satd. Flow (perm)		3335						1711			1173	
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)	18	1416	76	0	0	0	0	95	145	93	98	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1506	0	0	0	0	0	217	0	0	191	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.8						15.3			15.3	
Effective Green, g (s)		31.8						15.3			15.3	
Actuated g/C Ratio		0.58						0.28			0.28	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1925						475			326	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.45									c0.16	
v/c Ratio		0.78						0.46			0.59	
Uniform Delay, d1		9.0						16.5			17.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.1						0.7			2.7	
Delay (s)		11.0						17.2			19.8	
Level of Service		B						B			B	
Approach Delay (s)		11.0			0.0			17.2			19.8	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1191	18	0	0	0	0	26	25	26	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3352						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3352						1597			1348	
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)	24	1228	19	0	0	0	0	27	26	27	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1270	0	0	0	0	0	30	0	0	56	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		31.0						4.5			4.5	
Effective Green, g (s)		31.5						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2373						179			151	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.38									c0.04	
v/c Ratio		0.54						0.17			0.37	
Uniform Delay, d1		3.1						17.9			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.4			1.5	
Delay (s)		3.3						18.3			19.8	
Level of Service		A						B			B	
Approach Delay (s)		3.3			0.0			18.3			19.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	44.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
418: Simpson Avenue/N Park Street #1012 & Ontario Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	48	1214	19	0	0	0	0	31	37	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	49	1252	20	0	0	0	0	32	38	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1271			1384	1360	636	779	1370	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1271			1384	1360	636	779	1370	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	77	91	79	68	100
cM capacity (veh/h)	1607			542			75	141	418	212	143	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	675	645	70	92
Volume Left	49	0	0	45
Volume Right	0	20	38	0
cSH	1607	1700	221	171
Volume to Capacity	0.03	0.38	0.32	0.54
Queue Length 95th (ft)	2	0	33	68
Control Delay (s)	0.9	0.0	28.7	48.3
Lane LOS	A		D	E
Approach Delay (s)	0.4		28.7	48.3
Approach LOS			D	E

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	876	12	0	0	0	0	458	9	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3323						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	952	13	0	0	0	0	498	10	0	0	0
RTOR Reduction (vph)	55	2	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	55	964	0	0	0	0	0	506	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	20.0	20.0						12.0				
Effective Green, g (s)	21.0	21.0						13.0				
Actuated g/C Ratio	0.50	0.50						0.31				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	876	1662						1081				
v/s Ratio Prot		c0.29						c0.14				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.58						0.47				
Uniform Delay, d1	5.4	7.4						11.7				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.5						0.3				
Delay (s)	5.5	7.9						12.0				
Level of Service	A	A						B				
Approach Delay (s)		7.6			0.0			12.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1133	71	0	0	0	0	27	174	42	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1575	1504		1811	
Flt Permitted		1.00	1.00					1.00	1.00		0.74	
Satd. Flow (perm)		2893	1300					1575	1504		1383	
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)	18	1218	76	0	0	0	0	29	187	45	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	40	40	0	0	0
Lane Group Flow (vph)	0	1236	67	0	0	0	0	69	67	0	79	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.1	53.1					7.9	7.9		7.9	
Effective Green, g (s)		53.6	53.6					8.4	8.4		8.4	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2215	995					189	180		166	
v/s Ratio Prot		c0.43						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.56	0.07					0.37	0.37		0.48	
Uniform Delay, d1		3.4	2.0					28.4	28.4		28.7	
Progression Factor		0.28	0.28					1.00	1.00		1.00	
Incremental Delay, d2		0.9	0.1					1.2	1.3		2.1	
Delay (s)		1.8	0.7					29.6	29.7		30.9	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.8			0.0			29.6			30.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	24	1103	25	0	0	0	0	12	88	8	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2883						1314			1459	
Flt Permitted		1.00						1.00			0.86	
Satd. Flow (perm)		2883						1314			1282	
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)	25	1161	26	0	0	0	0	13	93	8	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	47	0	0	0	0
Lane Group Flow (vph)	0	1211	0	0	0	0	0	59	0	0	19	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.3						7.7			7.7	
Effective Green, g (s)		54.3						7.7			7.7	
Actuated g/C Ratio		0.78						0.11			0.11	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2236						145			141	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.42									0.01	
v/c Ratio		0.54						0.41			0.13	
Uniform Delay, d1		3.0						29.0			28.1	
Progression Factor		0.37						1.00			1.00	
Incremental Delay, d2		0.6						1.9			0.4	
Delay (s)		1.7						30.9			28.6	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			30.9			28.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	947	16	0	0	0	0	0	37	299	227	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2888							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2888							1289	1681	1405	
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)	0	997	17	0	0	0	0	0	39	315	239	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	33	164	10	0
Lane Group Flow (vph)	0	1012	0	0	0	0	0	0	6	107	273	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		28.9							9.5	18.1	18.1	
Effective Green, g (s)		29.4							10.0	18.6	18.6	
Actuated g/C Ratio		0.42							0.14	0.27	0.27	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1213							184	447	373	
v/s Ratio Prot		c0.35							c0.00	0.06	c0.19	
v/s Ratio Perm												
v/c Ratio		0.83							0.03	0.24	0.73	
Uniform Delay, d1		18.1							25.8	20.1	23.4	
Progression Factor		1.11							1.00	1.00	1.00	
Incremental Delay, d2		6.3							0.3	1.3	12.0	
Delay (s)		26.4							26.1	21.4	35.5	
Level of Service		C							C	C	D	
Approach Delay (s)		26.4			0.0			26.1			28.6	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	8	403	12	0	0	0	0	45	26	480	48	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2879						1416		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2879						1416		1681	1360	
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)	9	429	13	0	0	0	0	48	28	511	51	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	448	0	0	0	0	0	51	0	281	281	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		18.4						6.8		31.3	31.3	
Effective Green, g (s)		18.9						7.3		31.8	31.8	
Actuated g/C Ratio		0.27						0.10		0.45	0.45	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		777						148		764	618	
v/s Ratio Prot								c0.04		0.17	c0.21	
v/s Ratio Perm		0.16										
v/c Ratio		0.58						0.34		0.37	0.45	
Uniform Delay, d1		22.1						29.1		12.5	13.1	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.0						1.4		1.4	2.4	
Delay (s)		23.1						30.5		13.9	15.5	
Level of Service		C						C		B	B	
Approach Delay (s)		23.1			0.0			30.5			14.7	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	327	0	538	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1791		2111		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1791		2111		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	363	0	598	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	363	0	598	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		29.6		29.6		
Effective Green, g (s)		29.6		29.6		
Actuated g/C Ratio		0.75		0.75		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1335		1574		
v/s Ratio Prot		0.20		c0.28		
v/s Ratio Perm						
v/c Ratio		0.27		0.38		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.2		
Delay (s)		1.7		1.9		
Level of Service		A		A		
Approach Delay (s)	1.7			1.9	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	39.7	Sum of lost time (s)	10.1
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	919	23	18	167	0	0	92	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					3490			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3490			3044			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	957	24	19	174	0	0	96	258
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	73	0
Lane Group Flow (vph)	0	0	0	0	994	0	0	193	0	0	281	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					48.8			12.2			12.2	
Effective Green, g (s)					49.3			12.7			12.7	
Actuated g/C Ratio					0.70			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2458			552			543	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.28			0.06				
v/c Ratio					0.40			0.35			0.52	
Uniform Delay, d1					4.3			25.0			25.9	
Progression Factor					1.37			1.04			1.00	
Incremental Delay, d2					0.5			0.4			0.8	
Delay (s)					6.3			26.3			26.7	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.3			26.3			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1227	19	13	389	0	0	52	278
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	4.0
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3353			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3353			1679			1710	1615
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)	0	0	0	15	1305	20	14	414	0	0	55	296
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	47
Lane Group Flow (vph)	0	0	0	0	1338	0	0	428	0	0	55	249
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2060			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.40			c0.25				0.15
v/c Ratio					0.65			0.94			0.12	0.57
Uniform Delay, d1					8.7			24.9			19.2	22.0
Progression Factor					0.62			1.00			1.00	1.00
Incremental Delay, d2					1.5			29.3			0.5	5.3
Delay (s)					6.9			54.2			19.7	27.3
Level of Service					A			D			B	C
Approach Delay (s)		0.0			6.9			54.2			26.1	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1142	94	32	69	0	0	215	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3567	1554		1815			1795	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3567	1554		1552			1795	
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)	0	0	0	46	1202	99	34	73	0	0	226	102
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1248	56	0	107	0	0	304	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					29.5	29.5		15.0			15.0	
Effective Green, g (s)					29.5	29.5		15.0			15.0	
Actuated g/C Ratio					0.56	0.56		0.29			0.29	
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)					2004	873		443			513	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.35	0.04		0.07				
v/c Ratio					0.62	0.06		0.24			0.59	
Uniform Delay, d1					7.8	5.2		14.4			16.1	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.3			1.8	
Delay (s)					8.4	5.3		14.7			18.0	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.1			14.7			18.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	52.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.9%	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)	0	0	0	34	1305	5	18	8	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.97			1.00	
Satd. Flow (prot)					3324			1621			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3324			1676			1777	
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)	0	0	0	36	1388	5	19	9	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1429	0	0	28	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.8			1.3			1.3	
Effective Green, g (s)					30.3			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2512			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.43			c0.02				
v/c Ratio					0.57			0.37			0.29	
Uniform Delay, d1					2.1			18.6			18.5	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			3.1			2.0	
Delay (s)					2.4			21.7			20.5	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.4			21.7			20.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	43	1194	12	53	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	47	1312	13	58	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1325			0			773	1420	0	1420	1413	663
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1325			0			773	1420	0	1420	1413	663
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			76	89	100	100	85	97
cM capacity (veh/h)	517			1622			243	131	1084	88	135	409

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	703	669	73	32
Volume Left	47	0	58	0
Volume Right	0	13	0	12
cSH	1622	1700	208	181
Volume to Capacity	0.03	0.39	0.35	0.18
Queue Length 95th (ft)	2	0	37	16
Control Delay (s)	0.8	0.0	31.2	29.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		31.2	29.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1182	2	512	26	0	0	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3361		1618	1631				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1618	1631				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1328	2	575	29	0	0	0	9
RTOR Reduction (vph)	0	0	0	0	0	0	153	153	0	0	0	9
Lane Group Flow (vph)	0	0	0	0	1330	0	146	152	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.2		10.9	10.9				0.7
Effective Green, g (s)					29.2		11.9	11.9				1.7
Actuated g/C Ratio					0.53		0.22	0.22				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1791		351	354				50
v/s Ratio Prot					c0.40							
v/s Ratio Perm							0.09	0.09				c0.00
v/c Ratio					0.74		0.41	0.43				0.01
Uniform Delay, d1					9.9		18.5	18.5				25.7
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.7		0.8	0.8				0.0
Delay (s)					11.6		19.3	19.3				25.8
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.6			19.3			25.8	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations			↑↑	↱		↱
Volume (veh/h)	0	0	1274	192	0	92
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1341	202	0	97
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1341				1341	671
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1341				1341	671
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	75
cM capacity (veh/h)	510				141	394

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	671	671	202	97
Volume Left	0	0	0	0
Volume Right	0	0	202	97
cSH	1700	1700	1700	394
Volume to Capacity	0.39	0.39	0.12	0.25
Queue Length 95th (ft)	0	0	0	24
Control Delay (s)	0.0	0.0	0.0	17.1
Lane LOS				C
Approach Delay (s)	0.0			17.1
Approach LOS				C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
479: Sumner Avenue/N Alder Street/Lincoln Street #1011 & 6th Street

8/19/2009

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	495	1108	0	0	9	100	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	510	1142	0	0	9	103	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			510	510	510	1653	1653	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			510	510	510	1653	1653	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	0	100	
cM capacity (veh/h)			466	563	474	98	390	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	891	762	9	103
Volume Left	0	0	9	0
Volume Right	381	762	0	0
cSH	1700	1700	474	98
Volume to Capacity	0.52	0.45	0.02	1.05
Queue Length 95th (ft)	0	0	1	163
Control Delay (s)	0.0	0.0	12.8	184.0
Lane LOS			B	F
Approach Delay (s)	0.0		169.9	
Approach LOS			F	

Intersection Summary			
Average Delay	10.8		
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	53	0	0	1230	0	487
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	0	0	1337	0	529
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	58	0	0	1337	0	529
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.3			47.6		69.9
Effective Green, g (s)	13.8			48.1		69.9
Actuated g/C Ratio	0.20			0.69		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	349			2412		2787
v/s Ratio Prot	0.03			c0.38		
v/s Ratio Perm						c0.19
v/c Ratio	0.17			0.55		0.19
Uniform Delay, d1	23.3			5.5		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	23.4			6.4		0.1
Level of Service	C			A		A
Approach Delay (s)	23.4			6.4	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	4.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	632	599	487	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1694	1845	3467	
Flt Permitted			0.37	1.00	1.00	
Satd. Flow (perm)			663	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	658	624	507	39
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	658	624	540	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			50.7	55.2	25.3	
Effective Green, g (s)			51.7	55.7	25.8	
Actuated g/C Ratio			0.74	0.80	0.37	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			872	1470	1280	
v/s Ratio Prot			c0.28	0.34	0.16	
v/s Ratio Perm			c0.28			
v/c Ratio			0.75	0.42	0.42	
Uniform Delay, d1			4.7	2.2	16.5	
Progression Factor			0.56	0.08	1.00	
Incremental Delay, d2			2.9	0.7	0.1	
Delay (s)			5.5	0.9	16.6	
Level of Service			A	A	B	
Approach Delay (s)	0.0			3.3	16.6	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	7.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	18.2
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	966	222	0	0	0	22	0	567	152	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.97				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2704				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2704				
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)	1039	239	0	0	0	24	0	610	163	0	0	0
RTOR Reduction (vph)	345	88	0	0	0	23	0	24	0	0	0	0
Lane Group Flow (vph)	289	556	0	0	0	1	0	749	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	8%	17%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	25.6	25.6				2.5		29.9				
Effective Green, g (s)	26.1	26.1				1.5		30.4				
Actuated g/C Ratio	0.37	0.37				0.02		0.43				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	603	620				27		1174				
v/s Ratio Prot								c0.28				
v/s Ratio Perm	0.18	0.33				c0.00						
v/c Ratio	0.48	0.90				0.02		0.64				
Uniform Delay, d1	16.8	20.7				33.5		15.5				
Progression Factor	1.22	0.32				1.00		1.00				
Incremental Delay, d2	1.6	12.0				0.1		1.1				
Delay (s)	22.0	18.5				33.6		16.6				
Level of Service	C	B				C		B				
Approach Delay (s)		20.2			33.6			16.6			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	22	0	0	176	18	53	1509	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1645			4933				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1271			1645			4933				
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)	17	23	0	0	185	19	56	1588	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	40	0	0	198	0	0	1650	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	15%	5%	3%	5%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		13.9			13.9			47.1				
Effective Green, g (s)		14.4			14.4			47.6				
Actuated g/C Ratio		0.21			0.21			0.68				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		261			338			3354				
v/s Ratio Prot					c0.12							
v/s Ratio Perm		0.03						0.33				
v/c Ratio		0.15			0.59			0.49				
Uniform Delay, d1		22.8			25.1			5.4				
Progression Factor		1.02			1.00			0.91				
Incremental Delay, d2		0.3			2.6			0.4				
Delay (s)		23.5			27.7			5.3				
Level of Service		C			C			A				
Approach Delay (s)		23.5			27.7			5.3			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
306: S "L" Street & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	92	147	0	0	98	116	72	1549	105	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.98	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1732	1504		4522				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1234			1732	1504		4522				
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)	97	155	0	0	103	122	76	1631	111	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	19	0	9	0	0	0	0
Lane Group Flow (vph)	0	252	0	0	111	86	0	1809	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	6%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.5			17.5	17.5		44.0				
Effective Green, g (s)		18.0			18.0	18.0		44.0				
Actuated g/C Ratio		0.26			0.26	0.26		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		317			445	387		2842				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.06		0.40				
v/c Ratio		0.79			0.25	0.22		0.64				
Uniform Delay, d1		24.3			20.6	20.5		8.0				
Progression Factor		0.93			1.00	1.00		2.12				
Incremental Delay, d2		12.0			0.3	0.3		1.0				
Delay (s)		34.7			20.9	20.8		18.0				
Level of Service		C			C	C		B				
Approach Delay (s)		34.7			20.9			18.0			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
307: S "K" Street & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	78	31	0	0	73	32	28	1544	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1786			4382				
Flt Permitted		0.70			1.00			1.00				
Satd. Flow (perm)		1310			1786			4382				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	90	36	0	0	84	37	32	1775	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	126	0	0	106	0	0	1856	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.7			11.7			49.8				
Effective Green, g (s)		12.2			12.2			49.8				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		228			311			3117				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.10						0.42				
v/c Ratio		0.55			0.34			0.60				
Uniform Delay, d1		26.4			25.4			5.1				
Progression Factor		1.60			1.00			0.23				
Incremental Delay, d2		2.8			0.7			0.7				
Delay (s)		45.1			26.0			1.9				
Level of Service		D			C			A				
Approach Delay (s)		45.1			26.0			1.9			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	238	26	0	0	32	18	62	1715	22	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4391				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1057			1418			4391				
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)	253	28	0	0	34	19	66	1824	23	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	281	0	0	44	0	0	1911	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.7			20.7			39.3				
Effective Green, g (s)		21.2			21.2			40.8				
Actuated g/C Ratio		0.30			0.30			0.58				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		320			429			2559				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.27						0.44				
v/c Ratio		0.88			0.10			0.75				
Uniform Delay, d1		23.2			17.6			10.8				
Progression Factor		0.68			1.00			0.61				
Incremental Delay, d2		22.3			0.1			1.7				
Delay (s)		38.0			17.7			8.2				
Level of Service		D			B			A				
Approach Delay (s)		38.0			17.7			8.2			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	54	15	0	0	8	10	23	1686	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.93			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1380			4395				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1132			1380			4395				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	61	17	0	0	9	11	26	1916	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	78	0	0	10	0	0	1959	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		150			183			3309				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.45				
v/c Ratio		0.52			0.06			0.59				
Uniform Delay, d1		28.3			26.5			3.9				
Progression Factor		0.82			1.00			0.24				
Incremental Delay, d2		3.1			0.1			0.5				
Delay (s)		26.4			26.7			1.4				
Level of Service		C			C			A				
Approach Delay (s)		26.4			26.7			1.4			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	70.0	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			

HCM Signalized Intersection Capacity Analysis
310: S "I" Street & W Wishkah Street #1011

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	57	38	35	36	0	0	0	0	17	1450	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4427	
Flt Permitted		1.00			0.79						1.00	
Satd. Flow (perm)		1410			1184						4427	
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)	0	63	42	39	40	0	0	0	0	19	1611	41
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	81	0	0	79	0	0	0	0	0	1669	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.9	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		183			154						3346	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.07						0.38	
v/c Ratio		0.44			0.51						0.50	
Uniform Delay, d1		28.1			28.4						3.4	
Progression Factor		1.00			0.96						0.67	
Incremental Delay, d2		1.7			2.8						0.5	
Delay (s)		29.8			30.0						2.7	
Level of Service		C			C						A	
Approach Delay (s)		29.8			30.0			0.0			2.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
311: Broadway Street & W Wishkah Street #1011

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	148	51	25	76	0	0	0	0	9	1306	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1443			1472						4407	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1443			1328						4407	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	161	55	27	83	0	0	0	0	10	1420	86
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	196	0	0	110	0	0	0	0	0	1509	0
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		14.6			14.6						45.4	
Effective Green, g (s)		15.1			15.1						46.9	
Actuated g/C Ratio		0.22			0.22						0.67	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		311			286						2953	
v/s Ratio Prot		c0.14										
v/s Ratio Perm					0.08						0.34	
v/c Ratio		0.63			0.38						0.51	
Uniform Delay, d1		24.9			23.5						5.8	
Progression Factor		1.00			0.95						0.28	
Incremental Delay, d2		3.9			0.8						0.6	
Delay (s)		28.9			23.0						2.2	
Level of Service		C			C						A	
Approach Delay (s)		28.9			23.0			0.0			2.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
312: S "K" Street & W Wishkah Street #1011

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	77	21	16	45	0	0	0	0	19	1336	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1447			1471						4430	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1447			1340						4430	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	84	23	17	49	0	0	0	0	21	1452	28
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	90	0	0	66	0	0	0	0	0	1499	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.9	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		188			174						3348	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.34	
v/c Ratio		0.48			0.38						0.45	
Uniform Delay, d1		28.2			27.9						3.2	
Progression Factor		1.00			0.51						0.22	
Incremental Delay, d2		1.9			1.3						0.4	
Delay (s)		30.1			15.7						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.1			15.7			0.0			1.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	106	30	73	93	0	0	0	0	133	1197	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1811			1823						4572	
Flt Permitted		1.00			0.82						1.00	
Satd. Flow (perm)		1811			1522						4572	
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)	0	112	32	77	98	0	0	0	0	140	1260	33
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	129	0	0	175	0	0	0	0	0	1430	0
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		530			446						2711	
v/s Ratio Prot		0.07										
v/s Ratio Perm					c0.11						0.31	
v/c Ratio		0.24			0.39						0.53	
Uniform Delay, d1		18.8			19.8						8.4	
Progression Factor		1.00			0.96						0.82	
Incremental Delay, d2		1.1			2.4						0.7	
Delay (s)		19.9			21.4						7.6	
Level of Service		B			C						A	
Approach Delay (s)		19.9			21.4			0.0			7.6	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	43	173	0	0	0	0	22	510	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.94	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1349						2559	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1349						2559	1400
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)	0	0	0	46	184	0	0	0	0	23	543	830
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	98	163
Lane Group Flow (vph)	0	0	0	0	230	0	0	0	0	0	858	277
Heavy Vehicles (%)	2%	2%	2%	42%	4%	2%	2%	2%	2%	0%	10%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					17.5						43.5	43.5
Effective Green, g (s)					18.0						44.0	44.0
Actuated g/C Ratio					0.26						0.63	0.63
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					347						1609	880
v/s Ratio Prot												
v/s Ratio Perm					0.17						0.34	0.20
v/c Ratio					0.66						0.53	0.31
Uniform Delay, d1					23.3						7.3	6.0
Progression Factor					0.84						0.58	0.33
Incremental Delay, d2					4.5						1.1	0.8
Delay (s)					24.1						5.3	2.8
Level of Service					C						A	A
Approach Delay (s)		0.0			24.1			0.0			4.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1131	38	0	0	0	0	0	0	19	513	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3107									2722	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3107									2722	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1300	44	0	0	0	0	0	0	22	590	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	1341	0	0	0	0	0	0	0	0	607	0
Heavy Vehicles (%)	0%	4%	6%	2%	2%	2%	2%	2%	2%	0%	13%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		37.8									23.2	
Effective Green, g (s)		38.3									23.7	
Actuated g/C Ratio		0.55									0.34	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1700									922	
v/s Ratio Prot		c0.43										
v/s Ratio Perm											0.22	
v/c Ratio		0.79									0.66	
Uniform Delay, d1		12.6									19.7	
Progression Factor		0.79									1.44	
Incremental Delay, d2		3.3									1.5	
Delay (s)		13.3									29.8	
Level of Service		B									C	
Approach Delay (s)		13.3			0.0			0.0			29.8	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	120	670	0	0	0	0	0	1523	419	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1242			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1242			
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)	126	705	0	0	0	0	0	1603	441	0	0	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	36	0	0	0
Lane Group Flow (vph)	0	821	0	0	0	0	0	1603	405	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	4%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		19.4						42.1	42.1			
Effective Green, g (s)		19.4						42.6	42.6			
Actuated g/C Ratio		0.28						0.61	0.61			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1268						1865	756			
v/s Ratio Prot								c0.52				
v/s Ratio Perm		0.18							0.33			
v/c Ratio		0.65						0.86	0.54			
Uniform Delay, d1		22.3						11.2	8.0			
Progression Factor		0.89						1.81	2.02			
Incremental Delay, d2		1.1						4.7	2.3			
Delay (s)		20.8						25.0	18.4			
Level of Service		C						C	B			
Approach Delay (s)		20.8			0.0			23.6			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	594	419	81	1465	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3261			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3261			2943				
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)	0	0	0	0	612	432	84	1510	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1028	0	0	1588	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					23.7			37.3				
Effective Green, g (s)					24.2			37.8				
Actuated g/C Ratio					0.35			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1127			1589				
v/s Ratio Prot					c0.32							
v/s Ratio Perm								0.54				
v/c Ratio					0.91			1.00				
Uniform Delay, d1					21.9			16.1				
Progression Factor					1.00			0.79				
Incremental Delay, d2					11.1			16.3				
Delay (s)					33.0			29.1				
Level of Service					C			C				
Approach Delay (s)		0.0			33.0			29.1			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	275	49	0	0	0	0	0	0	373	1244	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2940									4395	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2940									4395	
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)	0	296	53	0	0	0	0	0	0	401	1338	0
RTOR Reduction (vph)	0	25	0	0	0	0	0	0	0	0	53	0
Lane Group Flow (vph)	0	324	0	0	0	0	0	0	0	0	1686	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.9									48.1	
Effective Green, g (s)		13.4									48.6	
Actuated g/C Ratio		0.19									0.69	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		563									3051	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.38	
v/c Ratio		0.58									0.55	
Uniform Delay, d1		25.7									5.3	
Progression Factor		1.00									0.63	
Incremental Delay, d2		1.4									0.6	
Delay (s)		27.1									4.0	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			4.0	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	360	305	0	0	0	0	0	1372	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.98						1.00	
Satd. Flow (prot)				1264	3273						4416	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1264	3273						4416	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	391	332	0	0	0	0	0	1491	70
RTOR Reduction (vph)	0	0	0	18	18	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	217	470	0	0	0	0	0	1555	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				17.8	17.8						43.2	
Effective Green, g (s)				18.3	18.3						43.7	
Actuated g/C Ratio				0.26	0.26						0.62	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				330	856						2757	
v/s Ratio Prot				c0.17	0.14						c0.35	
v/s Ratio Perm												
v/c Ratio				0.66	0.55						0.56	
Uniform Delay, d1				23.0	22.3						7.6	
Progression Factor				1.13	1.19						1.00	
Incremental Delay, d2				2.1	0.3						0.8	
Delay (s)				28.1	26.9						8.5	
Level of Service				C	C						A	
Approach Delay (s)		0.0			27.3			0.0			8.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1290	37	28	1113	2	356	9	18	17	4	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.95	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.98	
Satd. Flow (prot)		3329		1727	3342		1681	1673			1732	
Flt Permitted		0.93		0.95	1.00		0.95	0.96			0.98	
Satd. Flow (perm)		3084		1727	3342		1681	1673			1732	
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)	18	1518	44	33	1309	2	419	11	21	20	5	15
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	14	0
Lane Group Flow (vph)	0	1579	0	33	1311	0	226	222	0	0	26	0
Heavy Vehicles (%)	2%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	1%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.1		5.4	80.5		17.4	17.4			5.1	
Effective Green, g (s)		72.1		5.4	81.5		18.4	18.4			6.1	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1884		79	2308		262	261			90	
v/s Ratio Prot				0.02	c0.39		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.51										
v/c Ratio		0.84		0.42	0.57		0.86	0.85			0.29	
Uniform Delay, d1		18.3		54.8	9.3		48.6	48.4			53.9	
Progression Factor		1.00		1.03	0.60		1.00	1.00			1.00	
Incremental Delay, d2		4.6		2.7	0.8		24.1	21.8			1.8	
Delay (s)		22.9		59.0	6.4		72.7	70.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		22.9			7.7			71.5			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	1633	104	54	1166	0	220	9	111	52	19	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3313		1727	3343		1665	1553			1750	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3313		1727	3343		1665	1553			1750	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	27	1701	108	56	1215	0	229	9	116	54	20	26
RTOR Reduction (vph)	0	3	0	0	0	0	0	64	0	0	12	0
Lane Group Flow (vph)	27	1806	0	56	1215	0	183	107	0	0	88	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.0		7.7	66.1		14.6	14.6			11.7	
Effective Green, g (s)	6.6	66.0		7.7	67.1		15.6	15.6			12.7	
Actuated g/C Ratio	0.06	0.56		0.07	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1853		113	1901		220	205			188	
v/s Ratio Prot	0.02	c0.55		0.03	c0.36		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.28	0.97		0.50	0.64		0.83	0.52			0.47	
Uniform Delay, d1	53.4	25.2		53.3	17.2		49.9	47.7			49.5	
Progression Factor	0.80	0.63		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	12.9		2.5	1.7		23.2	2.7			2.1	
Delay (s)	43.7	28.8		55.8	18.9		73.1	50.4			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		29.0			20.5			62.1			51.6	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	830	3	533	760	0	326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.94	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3442		3145	1616		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3442		3145	1616		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1025	4	658	938	0	402
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1029	0	1089	507	0	402
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	30.1		33.2	75.3		33.2
Effective Green, g (s)	32.1		35.2	75.3		35.2
Actuated g/C Ratio	0.43		0.47	1.00		0.47
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1467		1470	1616		1242
v/s Ratio Prot	c0.30		c0.35	0.31		0.15
v/s Ratio Perm						
v/c Ratio	0.70		0.74	0.31		0.32
Uniform Delay, d1	17.7		16.3	0.0		12.6
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	1.4		1.9	0.5		0.1
Delay (s)	19.1		18.3	0.5		12.7
Level of Service	B		B	A		B
Approach Delay (s)	19.1		12.6		12.7	
Approach LOS	B		B		B	

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	75.3	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			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	21	0	0	9	19	647	1	3	346	56
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	22	0	0	9	20	681	1	3	364	59
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1138	1129	401	1116	1158	684	429			683		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1138	1129	401	1116	1158	684	429			683		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	172	200	649	176	192	452	1129			909		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	22	9	13	689	3	423
Volume Left	0	0	13	7	3	0
Volume Right	22	9	0	1	0	59
cSH	649	452	1129	1129	909	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.25
Queue Length 95th (ft)	3	2	1	1	0	0
Control Delay (s)	10.7	13.1	8.2	0.3	9.0	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.1	0.5		0.1	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	39.0%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
332: S M Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	25	1	10	0	2	4	14	602	2	2	298	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	27	1	11	0	2	4	15	647	2	2	320	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1023	1020	336	1015	1034	648	352			649		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1023	1020	336	1015	1034	648	352			649		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	100	98	100	99	99	99			100		
cM capacity (veh/h)	209	234	708	211	230	472	1213			937		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	39	6	15	649	2	352
Volume Left	27	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	261	349	1213	1700	937	1700
Volume to Capacity	0.15	0.02	0.01	0.38	0.00	0.21
Queue Length 95th (ft)	13	1	1	0	0	0
Control Delay (s)	21.2	15.5	8.0	0.0	8.9	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	21.2	15.5	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	17	400	2	2	226	168
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	20	460	2	2	260	193
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	867	862	356	768	957	461	453			462		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	867	862	356	768	957	461	453			462		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	92	100	100	100	98	99	98			100		
cM capacity (veh/h)	264	289	692	302	244	582	1118			1110		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	20	462	2	453
Volume Left	22	0	20	0	2	0
Volume Right	3	5	0	2	0	193
cSH	289	329	1118	1700	1110	1700
Volume to Capacity	0.09	0.03	0.02	0.27	0.00	0.27
Queue Length 95th (ft)	7	2	1	0	0	0
Control Delay (s)	18.7	16.3	8.3	0.0	8.3	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	18.7	16.3	0.3		0.0	
Approach LOS	C	C				

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	36.7%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
336: Simpson Avenue/N Park Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	378	37	0	0	0	1	98	1	2	232	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	398	39	0	0	0	1	103	1	2	244	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			437			554	417	417	470	437	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			437			554	417	417	470	437	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	80	100	100	52	99
cM capacity (veh/h)	1604			1134			275	528	638	427	513	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	437	0	105	261
Volume Left	0	0	1	2
Volume Right	39	0	1	15
cSH	1604	1700	524	528
Volume to Capacity	0.00	0.00	0.20	0.49
Queue Length 95th (ft)	0	0	19	68
Control Delay (s)	0.0	0.0	13.6	18.3
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.6	18.3
Approach LOS			B	C

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	657	1	3	626	9	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	706	1	3	673	10	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			708		1387	707
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			708		1387	707
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		92	99
cM capacity (veh/h)			864		124	364

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	708	676	12
Volume Left	0	3	10
Volume Right	1	0	2
cSH	1700	864	141
Volume to Capacity	0.42	0.00	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.1	32.9
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	32.9
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	561	89	209	539	10	113	1	263	9	2	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	610	97	227	586	11	123	1	286	10	2	9
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	598			710			1737	1733	663	2013	1776	593
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	598			710			1737	1733	663	2013	1776	593
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			75			0	98	38	23	96	98
cM capacity (veh/h)	964			897			53	65	462	13	59	497

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	716	824	410	21
Volume Left	10	227	123	10
Volume Right	97	11	286	9
cSH	964	897	138	25
Volume to Capacity	0.01	0.25	2.97	0.82
Queue Length 95th (ft)	1	25	950	63
Control Delay (s)	0.3	5.8	955.4	341.2
Lane LOS	A	A	F	F
Approach Delay (s)	0.3	5.8	955.4	341.2
Approach LOS			F	F

Intersection Summary				
Average Delay		204.8		
Intersection Capacity Utilization		111.2%	ICU Level of Service	H
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
352: W Wishkah St & Williams Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	827	1	1	741	1	1	0	1	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	899	1	1	805	1	1	0	1	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	807			900			1711	1710	899	1711	1710	806
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	807			900			1711	1710	899	1711	1710	806
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			98	100	100	98	100	100
cM capacity (veh/h)	805			742			71	90	337	71	90	382

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	901	808	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	805	742	117	120
Volume to Capacity	0.00	0.00	0.02	0.02
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	36.2	35.6
Lane LOS	A	A	E	E
Approach Delay (s)	0.0	0.0	36.2	35.6
Approach LOS			E	E

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	740	35	14	684	11	6	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	52	813	38	15	752	12	7	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	766			852			1760	1732	834	1731	1745	761
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	766			852			1760	1732	834	1731	1745	761
tC, single (s)	4.1			4.4			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.5			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			98			88	97	99	70	99	92
cM capacity (veh/h)	832			663			56	81	370	63	79	404

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	903	779	11	54
Volume Left	52	15	7	19
Volume Right	38	12	2	34
cSH	832	663	73	136
Volume to Capacity	0.06	0.02	0.15	0.40
Queue Length 95th (ft)	5	2	12	42
Control Delay (s)	1.7	0.6	62.5	48.0
Lane LOS	A	A	F	E
Approach Delay (s)	1.7	0.6	62.5	48.0
Approach LOS			F	E

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
354: W Wishkah Street & S Garfield St

8/19/2009

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	760	0	0	27	709
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	826	0	0	29	771
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			829	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			829	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			334	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	826	29	771
Volume Left	0	29	0
Volume Right	826	0	0
cSH	1700	1578	1700
Volume to Capacity	0.49	0.02	0.45
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
355: S Garfield St & W Heron Street

8/19/2009

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	773	5	0	20	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	849	5	0	22	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1702	1702	1704	0
vC1, stage 1 conf vol			1702	1702	0	
vC2, stage 2 conf vol			0	0	1704	
vCu, unblocked vol	0		1702	1702	1704	0
tC, single (s)	4.1		7.1	6.7	6.5	6.2
tC, 2 stage (s)			6.1	5.7	5.5	
tF (s)	2.2		3.5	4.2	4.0	3.3
p0 queue free %	47		100	44	100	100
cM capacity (veh/h)	1604		50	39	62	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	566	289	22
Volume Left	566	283	0
Volume Right	0	5	0
cSH	1604	1604	39
Volume to Capacity	0.53	0.53	0.56
Queue Length 95th (ft)	82	82	50
Control Delay (s)	9.7	9.7	179.9
Lane LOS	A	A	F
Approach Delay (s)	9.7		179.9
Approach LOS			F

Intersection Summary			
Average Delay	14.0		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
356: N Monroe Street & W Heron Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	22	3	0	0	172	8	12	769	21	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	25	3	0	0	195	9	14	874	24	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	571	925	0	915	913	449	0			898		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	571	925	0	915	913	449	0			898		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	99	100	100	28	98	99			100		
cM capacity (veh/h)	165	269	1091	226	271	560	1600			752		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	28	205	451	461
Volume Left	25	0	14	0
Volume Right	0	9	0	24
cSH	173	278	1600	1700
Volume to Capacity	0.16	0.74	0.01	0.27
Queue Length 95th (ft)	14	133	1	0
Control Delay (s)	29.8	47.1	0.3	0.0
Lane LOS	D	E	A	
Approach Delay (s)	29.8	47.1	0.1	
Approach LOS	D	E		

Intersection Summary				
Average Delay		9.3		
Intersection Capacity Utilization		45.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
357: N Lincoln Street & W Heron Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	8	6	0	0	16	2	5	783	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	8	6	0	0	17	2	5	816	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	429	831	2	834	829	410	0			821		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	429	831	2	834	829	410	0			821		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	95	100	100			100		
cM capacity (veh/h)	491	306	1086	259	307	596	1593			804		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	15	19	413	413
Volume Left	8	0	5	0
Volume Right	0	2	0	5
cSH	390	325	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.24
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	14.6	16.8	0.1	0.0
Lane LOS	B	C	A	
Approach Delay (s)	14.6	16.8	0.1	
Approach LOS	B	C		

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		36.4%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	92	9	38	728	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	107	10	44	847	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	579	949	4	947	945	431	3			857		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	579	949	4	947	945	431	3			857		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	95	97	100	100	52	98	97			100		
cM capacity (veh/h)	216	222	1019	181	223	524	1599			776		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	117	467	430
Volume Left	12	0	44	0
Volume Right	0	10	0	7
cSH	218	235	1599	1700
Volume to Capacity	0.09	0.50	0.03	0.25
Queue Length 95th (ft)	7	64	2	0
Control Delay (s)	23.0	34.6	0.9	0.0
Lane LOS	C	D	A	
Approach Delay (s)	23.0	34.6	0.5	
Approach LOS	C	D		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		39.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
359: N Washington Street & W Wishkah Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	18	86	42	0	0	0	0	3	536	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	21	102	50	0	0	0	0	4	638	11
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.86	0.86	0.86	0.86	0.86		0.86					
vC, conflicting volume	679	661	327	362	666	7	652			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	291	270	0	0	276	7	260			7		
tC, single (s)	7.8	6.8	7.0	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.3	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	98	87	91	100	100			100		
cM capacity (veh/h)	477	514	924	818	533	1055	1113			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	36	152	323	330
Volume Left	0	102	4	0
Volume Right	21	0	0	11
cSH	701	696	1541	1700
Volume to Capacity	0.05	0.22	0.00	0.19
Queue Length 95th (ft)	4	21	0	0
Control Delay (s)	10.4	11.6	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	10.4	11.6	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.6		
Intersection Capacity Utilization		37.5%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	613	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	659	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked	0.97	0.97	0.97	0.97	0.97		0.97					
vC, conflicting volume	696	688	338	363	695	4	672			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	636	628	268	294	634	4	611			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	346	389	717	603	386	1080	939			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	340	342
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	416	491	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.20
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	14.0	12.8	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	14.0	12.8	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	36.2%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	567	66	0	30	1	123	42	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	603	70	0	32	1	131	45	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	673			0			688	666	339	348	701	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	673			0			688	666	339	348	701	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	76	88	100
cM capacity (veh/h)	913			1565			302	379	663	542	360	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	315	372	33	176
Volume Left	14	0	0	131
Volume Right	0	70	1	0
cSH	1565	1700	385	480
Volume to Capacity	0.01	0.22	0.09	0.37
Queue Length 95th (ft)	1	0	7	41
Control Delay (s)	0.4	0.0	15.2	16.7
Lane LOS	A		C	C
Approach Delay (s)	0.2		15.2	16.7
Approach LOS			C	C

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
362: S Division Street & W Heron Street

8/19/2009

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	4	0	4	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	4	0	4	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	53			29			72	80	51	74	74	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	53			29			72	80	51	74	74	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	99	100	99	100	100
cM capacity (veh/h)	1552			1584			924	656	1023	897	805	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	53	4	5
Volume Left	0	0	0	5
Volume Right	17	4	0	0
cSH	1552	1584	656	897
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	0
Control Delay (s)	0.0	0.0	10.5	9.0
Lane LOS			B	A
Approach Delay (s)	0.0	0.0	10.5	9.0
Approach LOS			B	A

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	14.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	10	48	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	11	52	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	66	53	53			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	66	53	53			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	939	1015	1565			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	53
Volume Left	1	1	0
Volume Right	1	0	1
cSH	975	1565	1700
Volume to Capacity	0.00	0.00	0.03
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.7	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
371: Port Industrial Road & W 1st Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	35	489	4	4	559	6	16	3	5	5	0	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	40	562	5	5	643	7	18	3	6	6	0	49
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	643			567			1346	1297	564	1305	1302	646
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	643			567			1346	1297	564	1305	1302	646
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			83	98	99	95	100	89
cM capacity (veh/h)	901			1015			105	148	508	123	147	456

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	40	567	5	649	28	55
Volume Left	40	0	5	0	18	6
Volume Right	0	5	0	7	6	49
cSH	901	1700	1015	1700	132	355
Volume to Capacity	0.04	0.33	0.00	0.38	0.21	0.16
Queue Length 95th (ft)	4	0	0	0	19	14
Control Delay (s)	9.2	0.0	8.6	0.0	39.4	17.0
Lane LOS	A		A		E	C
Approach Delay (s)	0.6		0.1		39.4	17.0
Approach LOS					E	C

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
372: Port Industrial Road & Myrtle Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	413	10	15	490	119	9	14	39	68	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	449	11	16	533	129	10	15	42	74	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			460			1154	1186	454	1171	1127	597
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			460			1154	1186	454	1171	1127	597
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			98			93	91	93	48	97	94
cM capacity (veh/h)	890			1060			147	173	581	143	198	505

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	478	678	67	110
Volume Left	18	16	10	74
Volume Right	11	129	42	29
cSH	890	1060	296	181
Volume to Capacity	0.02	0.02	0.23	0.61
Queue Length 95th (ft)	2	1	21	84
Control Delay (s)	0.6	0.4	20.7	51.6
Lane LOS	A	A	C	F
Approach Delay (s)	0.6	0.4	20.7	51.6
Approach LOS			C	F

Intersection Summary				
Average Delay		5.7		
Intersection Capacity Utilization		57.9%	ICU Level of Service	B
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	367	2	4	0	381	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	412	2	4	0	428	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	428			415			445	873	413	494	446	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	428			415			445	873	413	494	446	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	87	95	100	100	100
cM capacity (veh/h)	1105			531			516	283	639	410	498	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	415	4	428	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	428	33
cSH	1105	1700	531	1700	385
Volume to Capacity	0.01	0.24	0.01	0.25	0.18
Queue Length 95th (ft)	1	0	1	0	16
Control Delay (s)	8.3	0.0	11.8	0.0	16.4
Lane LOS	A		B		C
Approach Delay (s)	0.2		0.1		16.4
Approach LOS					C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/19/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	40	0	2	0	0	0	31	51	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	47	0	2	0	0	0	36	60	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		114	96	0	174	95	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		114	96	0	174	95	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	94	100	95	100
cM capacity (veh/h)	1554			1620		805	764	1076	706	774	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	49	0	96	40
Volume Left	47	0	0	2
Volume Right	2	0	60	0
cSH	1554	1700	932	770
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	363	4	15	469	31	10	8	25	32	8	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1771			1845			1761	1538		1749	
Flt Permitted		0.98			0.99			0.81	1.00		0.81	
Satd. Flow (perm)		1745			1824			1472	1538		1451	
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)	12	390	4	16	504	33	11	9	27	34	9	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	406	0	0	551	0	0	20	4	0	45	0
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		24.1			24.1			5.6	5.6		5.6	
Effective Green, g (s)		24.6			24.6			6.1	6.1		6.1	
Actuated g/C Ratio		0.64			0.64			0.16	0.16		0.16	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1109			1159			232	242		229	
v/s Ratio Prot												
v/s Ratio Perm		0.23			c0.30			0.01	0.00		c0.03	
v/c Ratio		0.37			0.48			0.09	0.02		0.20	
Uniform Delay, d1		3.3			3.7			13.9	13.8		14.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.2	0.0		0.4	
Delay (s)		3.6			4.0			14.1	13.8		14.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.6			4.0			13.9			14.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	38.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	207	15	2	278	19	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	235	17	2	316	22	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			252		556	235
vC1, stage 1 conf vol					235	
vC2, stage 2 conf vol					320	
vCu, unblocked vol			252		556	235
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		97	100
cM capacity (veh/h)			1319		633	775

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	235	17	2	316	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1319	1700	649
Volume to Capacity	0.14	0.01	0.00	0.19	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.8
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.8
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	24.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
400: Simpson Avenue/N Park Street #1012 & Market Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	121	1246	11	0	0	0	0	56	25	16	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3344						3237			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3344						3237			3066	
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)	130	1340	12	0	0	0	0	60	27	17	88	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	1482	0	0	0	0	0	63	0	0	105	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2623						328			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.44									c0.03	
v/c Ratio		0.56						0.19			0.34	
Uniform Delay, d1		2.9						28.8			29.3	
Progression Factor		1.00						1.00			0.58	
Incremental Delay, d2		0.9						0.3			0.6	
Delay (s)		3.8						29.1			17.5	
Level of Service		A						C			B	
Approach Delay (s)		3.8			0.0			29.1			17.5	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1204	65	0	0	0	0	81	123	79	83	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3335						1711			1621	
Flt Permitted		1.00						1.00			0.71	
Satd. Flow (perm)		3335						1711			1173	
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)	18	1416	76	0	0	0	0	95	145	93	98	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1506	0	0	0	0	0	217	0	0	191	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.8						15.3			15.3	
Effective Green, g (s)		31.8						15.3			15.3	
Actuated g/C Ratio		0.58						0.28			0.28	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1925						475			326	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.45									c0.16	
v/c Ratio		0.78						0.46			0.59	
Uniform Delay, d1		9.0						16.5			17.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.1						0.7			2.7	
Delay (s)		11.0						17.2			19.8	
Level of Service		B						B			B	
Approach Delay (s)		11.0			0.0			17.2			19.8	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1191	18	0	0	0	0	26	25	26	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3352						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3352						1597			1348	
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)	24	1228	19	0	0	0	0	27	26	27	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1270	0	0	0	0	0	30	0	0	56	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		31.0						4.5			4.5	
Effective Green, g (s)		31.5						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2373						179			151	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.38									c0.04	
v/c Ratio		0.54						0.17			0.37	
Uniform Delay, d1		3.1						17.9			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.4			1.5	
Delay (s)		3.3						18.3			19.8	
Level of Service		A						B			B	
Approach Delay (s)		3.3			0.0			18.3			19.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	44.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
418: Simpson Avenue/N Park Street #1012 & Ontario Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	48	1214	19	0	0	0	0	31	37	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	49	1252	20	0	0	0	0	32	38	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1271			1384	1360	636	779	1370	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1271			1384	1360	636	779	1370	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	77	91	79	68	100
cM capacity (veh/h)	1607			542			75	141	418	212	143	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	675	645	70	92
Volume Left	49	0	0	45
Volume Right	0	20	38	0
cSH	1607	1700	221	171
Volume to Capacity	0.03	0.38	0.32	0.54
Queue Length 95th (ft)	2	0	33	68
Control Delay (s)	0.9	0.0	28.7	48.3
Lane LOS	A		D	E
Approach Delay (s)	0.4		28.7	48.3
Approach LOS			D	E

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	876	12	0	0	0	0	458	9	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3323						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	952	13	0	0	0	0	498	10	0	0	0
RTOR Reduction (vph)	55	2	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	55	964	0	0	0	0	0	506	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	20.0	20.0						12.0				
Effective Green, g (s)	21.0	21.0						13.0				
Actuated g/C Ratio	0.50	0.50						0.31				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	876	1662						1081				
v/s Ratio Prot		c0.29						c0.14				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.58						0.47				
Uniform Delay, d1	5.4	7.4						11.7				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.5						0.3				
Delay (s)	5.5	7.9						12.0				
Level of Service	A	A						B				
Approach Delay (s)		7.6			0.0			12.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1166	71	0	0	0	0	27	174	42	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1575	1504		1811	
Flt Permitted		1.00	1.00					1.00	1.00		0.74	
Satd. Flow (perm)		2893	1300					1575	1504		1385	
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)	18	1254	76	0	0	0	0	29	187	45	34	0
RTOR Reduction (vph)	0	0	8	0	0	0	0	36	36	0	0	0
Lane Group Flow (vph)	0	1272	68	0	0	0	0	73	71	0	79	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.0	53.0					8.0	8.0		8.0	
Effective Green, g (s)		53.5	53.5					8.5	8.5		8.5	
Actuated g/C Ratio		0.76	0.76					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2211	994					191	183		168	
v/s Ratio Prot		c0.44						0.05				
v/s Ratio Perm			0.05						0.05		c0.06	
v/c Ratio		0.58	0.07					0.38	0.39		0.47	
Uniform Delay, d1		3.5	2.1					28.3	28.4		28.7	
Progression Factor		0.28	0.30					1.00	1.00		1.00	
Incremental Delay, d2		1.0	0.1					1.3	1.4		2.1	
Delay (s)		1.9	0.7					29.6	29.7		30.7	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.9			0.0			29.7			30.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	24	1136	25	0	0	0	0	12	88	8	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2883						1314			1459	
Flt Permitted		1.00						1.00			0.86	
Satd. Flow (perm)		2883						1314			1286	
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)	25	1196	26	0	0	0	0	13	93	8	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	43	0	0	0	0
Lane Group Flow (vph)	0	1246	0	0	0	0	0	63	0	0	19	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.1						7.9			7.9	
Effective Green, g (s)		54.1						7.9			7.9	
Actuated g/C Ratio		0.77						0.11			0.11	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2228						148			145	
v/s Ratio Prot								c0.05				
v/s Ratio Perm		0.43									0.01	
v/c Ratio		0.56						0.43			0.13	
Uniform Delay, d1		3.2						28.9			28.0	
Progression Factor		0.38						1.00			1.00	
Incremental Delay, d2		0.7						2.0			0.4	
Delay (s)		1.9						30.9			28.4	
Level of Service		A						C			C	
Approach Delay (s)		1.9			0.0			30.9			28.4	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	968	16	0	0	0	0	0	44	303	227	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2888							1302	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2888							1302	1681	1405	
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)	0	1019	17	0	0	0	0	0	46	319	239	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	39	155	10	0
Lane Group Flow (vph)	0	1034	0	0	0	0	0	0	7	120	274	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	1%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		29.0							9.5	18.0	18.0	
Effective Green, g (s)		29.5							10.0	18.5	18.5	
Actuated g/C Ratio		0.42							0.14	0.26	0.26	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1217							186	444	371	
v/s Ratio Prot		c0.36							c0.01	0.07	c0.20	
v/s Ratio Perm												
v/c Ratio		0.85							0.04	0.27	0.74	
Uniform Delay, d1		18.3							25.8	20.4	23.5	
Progression Factor		1.11							1.00	1.00	1.00	
Incremental Delay, d2		6.9							0.4	1.5	12.5	
Delay (s)		27.2							26.2	21.9	36.0	
Level of Service		C							C	C	D	
Approach Delay (s)		27.2			0.0			26.2			29.1	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	8	415	12	0	0	0	0	45	26	490	48	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2880						1416		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2880						1416		1681	1360	
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)	9	441	13	0	0	0	0	48	28	521	51	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	460	0	0	0	0	0	51	0	287	285	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		18.7						6.8		31.0	31.0	
Effective Green, g (s)		19.2						7.3		31.5	31.5	
Actuated g/C Ratio		0.27						0.10		0.45	0.45	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		790						148		756	612	
v/s Ratio Prot								c0.04		0.17	c0.21	
v/s Ratio Perm		0.16										
v/c Ratio		0.58						0.34		0.38	0.47	
Uniform Delay, d1		21.9						29.1		12.8	13.4	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.1						1.4		1.4	2.5	
Delay (s)		23.0						30.5		14.2	15.9	
Level of Service		C						C		B	B	
Approach Delay (s)		23.0			0.0			30.5			15.1	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	339	0	538	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1791		2111		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1791		2111		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	377	0	598	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	377	0	598	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		29.6		29.6		
Effective Green, g (s)		29.6		29.6		
Actuated g/C Ratio		0.75		0.75		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1335		1574		
v/s Ratio Prot		0.21		c0.28		
v/s Ratio Perm						
v/c Ratio		0.28		0.38		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.2		
Delay (s)		1.7		1.9		
Level of Service		A		A		
Approach Delay (s)	1.7			1.9	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	39.7	Sum of lost time (s)	10.1
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	919	23	18	167	0	0	92	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					3490			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3490			3044			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	957	24	19	174	0	0	96	258
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	73	0
Lane Group Flow (vph)	0	0	0	0	994	0	0	193	0	0	281	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					48.8			12.2			12.2	
Effective Green, g (s)					49.3			12.7			12.7	
Actuated g/C Ratio					0.70			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2458			552			543	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.28			0.06				
v/c Ratio					0.40			0.35			0.52	
Uniform Delay, d1					4.3			25.0			25.9	
Progression Factor					1.37			1.04			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					6.3			26.3			26.7	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.3			26.3			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1227	19	13	389	0	0	52	278
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	4.0
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3353			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3353			1679			1710	1615
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)	0	0	0	15	1305	20	14	414	0	0	55	296
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	47
Lane Group Flow (vph)	0	0	0	0	1338	0	0	428	0	0	55	249
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2060			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.40			c0.25				0.15
v/c Ratio					0.65			0.94			0.12	0.57
Uniform Delay, d1					8.7			24.9			19.2	22.0
Progression Factor					0.66			1.00			1.00	1.00
Incremental Delay, d2					1.5			29.3			0.5	5.3
Delay (s)					7.2			54.2			19.7	27.3
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.2			54.2			26.1	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1142	94	32	69	0	0	215	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3567	1554		1815			1795	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3567	1554		1552			1795	
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)	0	0	0	46	1202	99	34	73	0	0	226	102
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1248	56	0	107	0	0	304	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					29.5	29.5		15.0			15.0	
Effective Green, g (s)					29.5	29.5		15.0			15.0	
Actuated g/C Ratio					0.56	0.56		0.29			0.29	
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)					2004	873		443			513	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.35	0.04		0.07				
v/c Ratio					0.62	0.06		0.24			0.59	
Uniform Delay, d1					7.8	5.2		14.4			16.1	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.3			1.8	
Delay (s)					8.4	5.3		14.7			18.0	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.1			14.7			18.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	52.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.9%	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)	0	0	0	34	1305	5	18	8	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.97			1.00	
Satd. Flow (prot)					3324			1621			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3324			1676			1777	
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)	0	0	0	36	1388	5	19	9	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1429	0	0	28	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.8			1.3			1.3	
Effective Green, g (s)					30.3			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2512			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.43			c0.02				
v/c Ratio					0.57			0.37			0.29	
Uniform Delay, d1					2.1			18.6			18.5	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			3.1			2.0	
Delay (s)					2.4			21.7			20.5	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.4			21.7			20.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	43	1194	12	53	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	47	1312	13	58	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1325			0			773	1420	0	1420	1413	663
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1325			0			773	1420	0	1420	1413	663
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			76	89	100	100	85	97
cM capacity (veh/h)	517			1622			243	131	1084	88	135	409

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	703	669	73	32
Volume Left	47	0	58	0
Volume Right	0	13	0	12
cSH	1622	1700	208	181
Volume to Capacity	0.03	0.39	0.35	0.18
Queue Length 95th (ft)	2	0	37	16
Control Delay (s)	0.8	0.0	31.2	29.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		31.2	29.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1182	2	512	26	0	0	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3361		1618	1631				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1618	1631				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1328	2	575	29	0	0	0	9
RTOR Reduction (vph)	0	0	0	0	0	0	153	153	0	0	0	9
Lane Group Flow (vph)	0	0	0	0	1330	0	146	152	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.2		10.9	10.9				0.7
Effective Green, g (s)					29.2		11.9	11.9				1.7
Actuated g/C Ratio					0.53		0.22	0.22				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1791		351	354				50
v/s Ratio Prot					c0.40							
v/s Ratio Perm							0.09	0.09				c0.00
v/c Ratio					0.74		0.41	0.43				0.01
Uniform Delay, d1					9.9		18.5	18.5				25.7
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.7		0.8	0.8				0.0
Delay (s)					11.6		19.3	19.3				25.8
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.6			19.3			25.8	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1274	192	0	96
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1341	202	0	101
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1341				1341	671
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1341				1341	671
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	74
cM capacity (veh/h)	510				141	394

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	671	671	202	101
Volume Left	0	0	0	0
Volume Right	0	0	202	101
cSH	1700	1700	1700	394
Volume to Capacity	0.39	0.39	0.12	0.26
Queue Length 95th (ft)	0	0	0	25
Control Delay (s)	0.0	0.0	0.0	17.2
Lane LOS				C
Approach Delay (s)	0.0			17.2
Approach LOS				C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
479: Sumner Avenue/N Alder Street/Lincoln Street #1011 & 6th Street

8/19/2009

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	499	1108	0	0	9	100	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	514	1142	0	0	9	103	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			514	514	514	1657	1657	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			514	514	514	1657	1657	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	0	100	
cM capacity (veh/h)			464	560	471	98	389	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	895	762	9	103
Volume Left	0	0	9	0
Volume Right	381	762	0	0
cSH	1700	1700	471	98
Volume to Capacity	0.53	0.45	0.02	1.05
Queue Length 95th (ft)	0	0	2	164
Control Delay (s)	0.0	0.0	12.8	186.5
Lane LOS			B	F
Approach Delay (s)	0.0		172.2	
Approach LOS			F	

Intersection Summary			
Average Delay	10.9		
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	53	0	0	1230	0	497
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	0	0	1337	0	540
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	58	0	0	1337	0	540
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.3			47.7		70.0
Effective Green, g (s)	13.8			48.2		70.0
Actuated g/C Ratio	0.20			0.69		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	349			2413		2787
v/s Ratio Prot	0.03			c0.38		
v/s Ratio Perm						c0.19
v/c Ratio	0.17			0.55		0.19
Uniform Delay, d1	23.3			5.5		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	23.4			6.3		0.1
Level of Service	C			A		A
Approach Delay (s)	23.4			6.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	632	599	497	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1694	1845	3468	
Flt Permitted			0.36	1.00	1.00	
Satd. Flow (perm)			651	1845	3468	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	658	624	518	39
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	658	624	551	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			50.8	55.3	25.4	
Effective Green, g (s)			51.8	55.8	25.9	
Actuated g/C Ratio			0.74	0.80	0.37	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			868	1471	1283	
v/s Ratio Prot			c0.28	0.34	0.16	
v/s Ratio Perm			c0.28			
v/c Ratio			0.76	0.42	0.43	
Uniform Delay, d1			4.9	2.2	16.5	
Progression Factor			0.56	0.08	1.00	
Incremental Delay, d2			3.0	0.7	0.1	
Delay (s)			5.7	0.9	16.6	
Level of Service			A	A	B	
Approach Delay (s)	0.0			3.4	16.6	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	7.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	947	218	0	0	0	21	0	646	143	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.97				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2449				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2449				
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)	1018	234	0	0	0	23	0	695	154	0	0	0
RTOR Reduction (vph)	355	91	0	0	0	22	0	19	0	0	0	0
Lane Group Flow (vph)	266	540	0	0	0	1	0	830	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	23%	17%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	24.2	24.2				2.5		31.3				
Effective Green, g (s)	24.7	24.7				1.5		31.8				
Actuated g/C Ratio	0.35	0.35				0.02		0.45				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	571	587				27		1113				
v/s Ratio Prot								c0.34				
v/s Ratio Perm	0.16	0.33				c0.00						
v/c Ratio	0.47	0.92				0.05		0.75				
Uniform Delay, d1	17.5	21.7				33.6		15.8				
Progression Factor	1.25	0.31				1.00		1.00				
Incremental Delay, d2	1.6	14.7				0.3		2.8				
Delay (s)	23.6	21.4				33.9		18.5				
Level of Service	C	C				C		B				
Approach Delay (s)		22.5			33.9			18.5			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	21	0	0	158	18	45	1577	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1631			4674				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1270			1631			4674				
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)	17	22	0	0	166	19	47	1660	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	180	0	0	1713	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	16%	5%	4%	11%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		13.2			13.2			47.8				
Effective Green, g (s)		13.7			13.7			48.3				
Actuated g/C Ratio		0.20			0.20			0.69				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		249			319			3225				
v/s Ratio Prot					c0.11							
v/s Ratio Perm		0.03						0.37				
v/c Ratio		0.16			0.56			0.53				
Uniform Delay, d1		23.4			25.5			5.3				
Progression Factor		1.03			1.00			0.99				
Incremental Delay, d2		0.3			2.3			0.4				
Delay (s)		24.4			27.7			5.6				
Level of Service		C			C			A				
Approach Delay (s)		24.4			27.7			5.6			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	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			

HCM Signalized Intersection Capacity Analysis
306: S "L" Street & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	64	1629	96	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1712	1504		4340				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4340				
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)	95	152	0	0	86	120	67	1715	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	16	0	8	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	80	0	1875	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	11%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.3			17.3	17.3		44.2				
Effective Green, g (s)		17.8			17.8	17.8		44.2				
Actuated g/C Ratio		0.25			0.25	0.25		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		316			435	382		2740				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.43				
v/c Ratio		0.78			0.22	0.21		0.68				
Uniform Delay, d1		24.3			20.6	20.6		8.4				
Progression Factor		0.93			1.00	1.00		2.07				
Incremental Delay, d2		11.1			0.3	0.3		1.3				
Delay (s)		33.7			20.9	20.8		18.6				
Level of Service		C			C	C		B				
Approach Delay (s)		33.7			20.9			18.6			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	76	31	0	0	71	32	28	1625	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1785			4194				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4194				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	87	36	0	0	82	37	32	1868	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	12	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	107	0	0	1949	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	11%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.5			11.5			50.0				
Effective Green, g (s)		12.0			12.0			50.0				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		227			306			2996				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.09						0.46				
v/c Ratio		0.54			0.35			0.65				
Uniform Delay, d1		26.5			25.6			5.3				
Progression Factor		1.60			1.00			0.23				
Incremental Delay, d2		2.6			0.7			0.8				
Delay (s)		45.0			26.2			2.1				
Level of Service		D			C			A				
Approach Delay (s)		45.0			26.2			2.1			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	233	25	0	0	32	18	54	1799	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4201				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4201				
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)	248	27	0	0	34	19	57	1914	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	7	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	275	0	0	46	0	0	1991	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	11%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.4			20.4			39.6				
Effective Green, g (s)		20.9			20.9			41.1				
Actuated g/C Ratio		0.30			0.30			0.59				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		315			423			2467				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.47				
v/c Ratio		0.87			0.11			0.81				
Uniform Delay, d1		23.3			17.8			11.3				
Progression Factor		0.67			1.00			0.60				
Incremental Delay, d2		22.1			0.1			2.3				
Delay (s)		37.7			17.9			9.2				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.9			9.2			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1771	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1374			4202				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1374			4202				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	60	17	0	0	8	11	25	2012	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	10	0	0	2054	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	11%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		151			183			3164				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.49				
v/c Ratio		0.51			0.06			0.65				
Uniform Delay, d1		28.2			26.5			4.2				
Progression Factor		0.83			1.00			0.21				
Incremental Delay, d2		2.6			0.1			0.6				
Delay (s)		26.1			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		26.1			26.6			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
310: S "I" Street & W Wishkah Street #1011

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	56	37	34	35	0	0	0	0	17	1478	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4196	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1185						4196	
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)	0	62	41	38	39	0	0	0	0	19	1642	40
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	80	0	0	77	0	0	0	0	0	1699	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	11%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.5			8.5						53.0	
Effective Green, g (s)		9.0			9.0						53.0	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		181			152						3177	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.06						0.40	
v/c Ratio		0.44			0.51						0.53	
Uniform Delay, d1		28.2			28.4						3.5	
Progression Factor		1.00			0.98						0.65	
Incremental Delay, d2		1.7			2.6						0.6	
Delay (s)		29.9			30.5						2.8	
Level of Service		C			C						A	
Approach Delay (s)		29.9			30.5			0.0			2.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	145	35	24	68	0	0	0	0	8	1337	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1451			1471						4149	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1451			1325						4149	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	158	38	26	74	0	0	0	0	9	1453	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	181	0	0	100	0	0	0	0	0	1540	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	12%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		13.9			13.9						46.1	
Effective Green, g (s)		14.4			14.4						47.6	
Actuated g/C Ratio		0.21			0.21						0.68	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		298			273						2821	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.08						0.37	
v/c Ratio		0.61			0.37						0.55	
Uniform Delay, d1		25.2			23.9						5.7	
Progression Factor		1.00			0.96						0.23	
Incremental Delay, d2		3.5			0.7						0.7	
Delay (s)		28.7			23.8						2.0	
Level of Service		C			C						A	
Approach Delay (s)		28.7			23.8			0.0			2.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
312: S "K" Street & W Wishkah Street #1011

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1352	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1448			1471						4162	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1448			1339						4162	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	82	22	17	49	0	0	0	0	21	1470	27
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	87	0	0	66	0	0	0	0	0	1517	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	12%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.4			8.4						53.1	
Effective Green, g (s)		8.9			8.9						53.1	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		184			170						3157	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.36	
v/c Ratio		0.47			0.39						0.48	
Uniform Delay, d1		28.4			28.1						3.2	
Progression Factor		1.00			0.49						0.21	
Incremental Delay, d2		1.9			1.4						0.4	
Delay (s)		30.3			15.3						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.3			15.3			0.0			1.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
313: S "L" Street & W Wishkah Street #1011

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	104	15	57	84	0	0	0	0	131	1215	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1831			1826						4319	
Flt Permitted		1.00			0.85						1.00	
Satd. Flow (perm)		1831			1577						4319	
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)	0	109	16	60	88	0	0	0	0	138	1279	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	117	0	0	148	0	0	0	0	0	1447	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	12%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		536			462						2561	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.33	
v/c Ratio		0.22			0.32						0.56	
Uniform Delay, d1		18.7			19.3						8.7	
Progression Factor		1.00			0.99						0.82	
Incremental Delay, d2		0.9			1.7						0.8	
Delay (s)		19.6			20.9						8.0	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.9			0.0			8.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	28	163	0	0	0	0	21	513	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.94	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1327						2302	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1327						2302	1400
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)	0	0	0	30	173	0	0	0	0	22	546	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	88	152
Lane Group Flow (vph)	0	0	0	0	203	0	0	0	0	0	863	279
Heavy Vehicles (%)	2%	2%	2%	64%	5%	2%	2%	2%	2%	0%	31%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					16.2						44.8	44.8
Effective Green, g (s)					16.7						45.3	45.3
Actuated g/C Ratio					0.24						0.65	0.65
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					317						1490	906
v/s Ratio Prot												
v/s Ratio Perm					0.15						0.37	0.20
v/c Ratio					0.64						0.58	0.31
Uniform Delay, d1					24.0						7.0	5.4
Progression Factor					0.83						0.86	0.27
Incremental Delay, d2					4.2						1.4	0.8
Delay (s)					24.2						7.4	2.2
Level of Service					C						A	A
Approach Delay (s)		0.0			24.2			0.0			5.8	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1109	22	0	0	0	0	0	0	19	502	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3112									2274	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3112									2274	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1275	25	0	0	0	0	0	0	22	577	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	1299	0	0	0	0	0	0	0	0	595	0
Heavy Vehicles (%)	0%	4%	10%	2%	2%	2%	2%	2%	2%	0%	36%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		36.1									24.9	
Effective Green, g (s)		36.6									25.4	
Actuated g/C Ratio		0.52									0.36	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1627									825	
v/s Ratio Prot		c0.42										
v/s Ratio Perm											0.26	
v/c Ratio		0.80									0.72	
Uniform Delay, d1		13.7									19.2	
Progression Factor		0.82									1.44	
Incremental Delay, d2		3.6									2.6	
Delay (s)		14.8									30.4	
Level of Service		B									C	
Approach Delay (s)		14.8			0.0			0.0			30.4	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1461	561	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1077			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1077			
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)	124	692	0	0	0	0	0	1538	591	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	804	0	0	0	0	0	1538	554	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	20%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		18.8						42.7	42.7			
Effective Green, g (s)		18.8						43.2	43.2			
Actuated g/C Ratio		0.27						0.62	0.62			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1229						1892	665			
v/s Ratio Prot								0.50				
v/s Ratio Perm		0.18							c0.51			
v/c Ratio		0.65						0.81	0.83			
Uniform Delay, d1		22.7						10.3	10.6			
Progression Factor		0.87						1.78	1.91			
Incremental Delay, d2		1.2						3.2	9.6			
Delay (s)		21.0						21.5	29.8			
Level of Service		C						C	C			
Approach Delay (s)		21.0			0.0			23.8			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	717	411	76	1407	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.95			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3047			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3047			2943				
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)	0	0	0	0	739	424	78	1451	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1145	0	0	1523	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	16%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					24.0			37.0				
Effective Green, g (s)					24.5			37.5				
Actuated g/C Ratio					0.35			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1066			1577				
v/s Ratio Prot					c0.38							
v/s Ratio Perm								0.52				
v/c Ratio					1.07			0.97				
Uniform Delay, d1					22.8			15.6				
Progression Factor					1.00			0.75				
Incremental Delay, d2					49.7			11.1				
Delay (s)					72.4			22.8				
Level of Service					E			C				
Approach Delay (s)		0.0			72.4			22.8			0.0	
Approach LOS		A			E			C			A	

Intersection Summary			
HCM Average Control Delay	44.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1282	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2948									4180	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4180	
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)	0	290	45	0	0	0	0	0	0	394	1378	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	50	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1722	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	12%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.7									48.3	
Effective Green, g (s)		13.2									48.8	
Actuated g/C Ratio		0.19									0.70	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		556									2914	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.41	
v/c Ratio		0.56									0.59	
Uniform Delay, d1		25.8									5.5	
Progression Factor		1.00									0.76	
Incremental Delay, d2		1.3									0.7	
Delay (s)		27.1									4.9	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			4.9	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	488	296	0	0	0	0	0	1272	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.98						1.00	
Satd. Flow (prot)				1068	3014						4415	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1068	3014						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	530	322	0	0	0	0	0	1383	68
RTOR Reduction (vph)	0	0	0	23	23	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	0	0	258	548	0	0	0	0	0	1444	0
Heavy Vehicles (%)	2%	2%	2%	23%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				20.7	20.7						40.3	
Effective Green, g (s)				21.2	21.2						40.8	
Actuated g/C Ratio				0.30	0.30						0.58	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				323	913						2573	
v/s Ratio Prot				c0.24	0.18						c0.33	
v/s Ratio Perm												
v/c Ratio				0.80	0.60						0.56	
Uniform Delay, d1				22.4	20.8						9.1	
Progression Factor				0.96	1.04						1.00	
Incremental Delay, d2				1.3	0.1						0.9	
Delay (s)				22.8	21.8						9.9	
Level of Service				C	C						A	
Approach Delay (s)		0.0			22.1			0.0			9.9	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
323: W Wishkah Street #121 #122 & S Chehalis Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1238	36	28	1027	2	349	8	18	17	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.98	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3311		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3125		1727	3311		1681	1672			1762	
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)	13	1456	42	33	1208	2	411	9	21	20	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1510	0	33	1210	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	9%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.3		5.4	80.7		17.3	17.3			5.0	
Effective Green, g (s)		72.3		5.4	81.7		18.3	18.3			6.0	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1915		79	2292		261	259			90	
v/s Ratio Prot				0.02	c0.37		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.53		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.8		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.56		1.00	1.00			1.00	
Incremental Delay, d2		3.4		2.8	0.7		22.4	19.9			1.7	
Delay (s)		20.5		59.5	5.6		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.5			7.0			69.6			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1575	102	53	1079	0	215	8	109	51	19	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3312		1727	3312		1665	1552			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3312		1727	3312		1665	1552			1751	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	1641	106	55	1124	0	224	8	114	53	20	25
RTOR Reduction (vph)	0	3	0	0	0	0	0	66	0	0	13	0
Lane Group Flow (vph)	26	1744	0	55	1124	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	9%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.3		7.6	66.3		14.5	14.5			11.6	
Effective Green, g (s)	6.6	66.3		7.6	67.3		15.5	15.5			12.6	
Actuated g/C Ratio	0.06	0.56		0.06	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1861		111	1889		219	204			187	
v/s Ratio Prot	0.02	c0.53		0.03	c0.34		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.27	0.94		0.50	0.60		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.9		53.3	16.5		49.9	47.6			49.5	
Progression Factor	0.78	0.60		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	8.6		2.5	1.4		21.0	2.2			2.1	
Delay (s)	42.3	22.9		55.9	17.9		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		23.2			19.6			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	963	3	516	903	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.93	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3176		3002	1491		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3176		3002	1491		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1189	4	637	1115	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1193	0	1195	557	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	16%	7%	7%	16%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	39.2		40.5	91.7		40.5
Effective Green, g (s)	41.2		42.5	91.7		42.5
Actuated g/C Ratio	0.45		0.46	1.00		0.46
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1427		1391	1491		1231
v/s Ratio Prot	c0.38		c0.40	0.37		0.14
v/s Ratio Perm						
v/c Ratio	0.84		0.86	0.37		0.31
Uniform Delay, d1	22.3		21.9	0.0		15.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	4.3		5.4	0.7		0.1
Delay (s)	26.6		27.4	0.7		15.5
Level of Service	C		C	A		B
Approach Delay (s)	26.6		18.9		15.5	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	91.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	20	0	0	8	19	635	1	3	340	55
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	21	0	0	8	20	668	1	3	358	58
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1117	1110	394	1096	1138	671	422			670		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1117	1110	394	1096	1138	671	422			670		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	178	205	655	182	197	459	1136			919		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	676	3	416
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	655	459	1136	1136	919	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.24
Queue Length 95th (ft)	2	1	1	1	0	0
Control Delay (s)	10.7	13.0	8.2	0.3	8.9	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.0	0.5		0.1	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	38.6%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
332: S M Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	24	1	10	0	2	4	14	590	2	2	292	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	26	1	11	0	2	4	15	634	2	2	314	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1004	1001	330	995	1015	635	345			637		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1004	1001	330	995	1015	635	345			637		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	98	100	99	99	99			100		
cM capacity (veh/h)	216	240	714	218	236	480	1219			947		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	637	2	345
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	270	357	1219	1700	947	1700
Volume to Capacity	0.14	0.02	0.01	0.37	0.00	0.20
Queue Length 95th (ft)	12	1	1	0	0	0
Control Delay (s)	20.5	15.3	8.0	0.0	8.8	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	20.5	15.3	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	2	393	2	2	222	164
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	2	452	2	2	255	189
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	818	813	349	721	906	453	444			454		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	818	813	349	721	906	453	444			454		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	92	100	100	100	98	99	100			100		
cM capacity (veh/h)	289	314	698	329	266	589	1127			1117		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	454	2	444
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	189
cSH	314	351	1127	1700	1117	1700
Volume to Capacity	0.08	0.03	0.00	0.27	0.00	0.26
Queue Length 95th (ft)	7	2	0	0	0	0
Control Delay (s)	17.5	15.6	8.2	0.0	8.2	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	17.5	15.6	0.0		0.0	
Approach LOS	C	C				

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	36.3%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
336: Simpson Avenue/N Park Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	370	30	0	0	0	1	82	1	2	227	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	389	32	0	0	0	1	86	1	2	239	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			421			539	405	405	449	421	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			421			539	405	405	449	421	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	84	100	100	54	99
cM capacity (veh/h)	1604			1149			288	536	648	455	524	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	421	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	532	539
Volume to Capacity	0.00	0.00	0.17	0.47
Queue Length 95th (ft)	0	0	15	63
Control Delay (s)	0.0	0.0	13.1	17.6
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.1	17.6
Approach LOS			B	C

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	573	8	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	599	1	3	616	9	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1222	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1222	599
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		95	99
cM capacity (veh/h)			948		159	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	619	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	181
Volume to Capacity	0.35	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	26.1
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	26.1
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	550	0	2	598	10	0	1	0	8	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	598	0	2	650	11	0	1	0	9	2	8
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			601			1288	1284	603	1279	1279	657
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			601			1288	1284	603	1279	1279	657
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	94	99	98
cM capacity (veh/h)	912			959			136	164	500	138	161	457

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	663	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	912	959	164	198
Volume to Capacity	0.01	0.00	0.01	0.09
Queue Length 95th (ft)	1	0	1	8
Control Delay (s)	0.3	0.1	27.1	25.1
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	27.1	25.1
Approach LOS			D	D

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	553	1	1	523	1	71	0	163	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	601	1	1	568	1	77	0	177	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	570			602			1176	1176	602	1352	1176	569
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570			602			1176	1176	602	1352	1176	569
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			54	100	65	99	100	100
cM capacity (veh/h)	988			961			169	191	504	82	191	522

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	603	571	254	2
Volume Left	1	1	77	1
Volume Right	1	1	177	1
cSH	988	961	315	142
Volume to Capacity	0.00	0.00	0.81	0.02
Queue Length 95th (ft)	0	0	167	1
Control Delay (s)	0.0	0.0	50.9	30.7
Lane LOS	A	A	F	D
Approach Delay (s)	0.0	0.0	50.9	30.7
Approach LOS			F	D

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	630	34	186	468	11	6	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	692	37	204	514	12	7	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			730			1777	1749	713	1749	1762	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			730			1777	1749	713	1749	1762	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			65			84	96	99	59	98	94
cM capacity (veh/h)	1021			577			42	53	434	45	52	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	780	731	11	54
Volume Left	51	204	7	19
Volume Right	37	12	2	34
cSH	1021	577	54	108
Volume to Capacity	0.05	0.35	0.20	0.50
Queue Length 95th (ft)	4	40	17	56
Control Delay (s)	1.3	9.5	88.1	67.3
Lane LOS	A	A	F	F
Approach Delay (s)	1.3	9.5	88.1	67.3
Approach LOS			F	F

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
354: W Wishkah Street & S Garfield St

8/17/2009

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	649	0	0	27	664
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	705	0	0	29	722
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			780	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			780	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			357	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	705	29	722
Volume Left	0	29	0
Volume Right	705	0	0
cSH	1700	1578	1700
Volume to Capacity	0.41	0.02	0.42
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	662	5	0	192	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	727	5	0	211	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1458	1458	1460	0
vC1, stage 1 conf vol			1458	1458	0	
vC2, stage 2 conf vol			0	0	1460	
vCu, unblocked vol	0		1458	1458	1460	0
tC, single (s)	4.2		7.1	7.3	6.5	6.2
tC, 2 stage (s)			6.1	6.3	5.5	
tF (s)	2.3		3.5	4.8	4.0	3.3
p0 queue free %	54		100	0	100	100
cM capacity (veh/h)	1597		80	47	95	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	485	248	211
Volume Left	485	242	0
Volume Right	0	5	0
cSH	1597	1597	47
Volume to Capacity	0.46	0.46	4.46
Queue Length 95th (ft)	61	61	Err
Control Delay (s)	9.1	9.0	Err
Lane LOS	A	A	F
Approach Delay (s)	9.1		Err
Approach LOS			F

Intersection Summary			
Average Delay	2242.0		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	21	3	0	0	169	7	12	830	20	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	3	0	0	192	8	14	943	23	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	603	993	0	984	982	483	0			966		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	603	993	0	984	982	483	0			966		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	99	100	100	22	99	99			100		
cM capacity (veh/h)	136	245	1091	201	247	532	1600			709		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	485	494
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	144	253	1600	1700
Volume to Capacity	0.19	0.79	0.01	0.29
Queue Length 95th (ft)	17	149	1	0
Control Delay (s)	35.6	57.6	0.3	0.0
Lane LOS	E	F	A	
Approach Delay (s)	35.6	57.6	0.1	
Approach LOS	E	F		

Intersection Summary				
Average Delay		10.5		
Intersection Capacity Utilization		46.6%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	6	0	0	16	2	5	844	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	6	0	0	17	2	5	879	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	460	895	2	897	892	442	0			884		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460	895	2	897	892	442	0			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	94	100	100			100		
cM capacity (veh/h)	464	281	1086	233	282	569	1593			761		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	445	445
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	357	299	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.26
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	15.5	17.8	0.1	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.5	17.8	0.1	
Approach LOS	C	C		

Intersection Summary				
Average Delay		0.6		
Intersection Capacity Utilization		37.3%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	31	797	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	105	9	36	927	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	600	1013	4	1011	1009	471	3			938		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600	1013	4	1011	1009	471	3			938		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	94	97	100	100	49	98	98			100		
cM capacity (veh/h)	200	204	1019	162	205	492	1592			724		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	499	470
Volume Left	12	0	36	0
Volume Right	0	9	0	7
cSH	202	215	1592	1700
Volume to Capacity	0.09	0.53	0.02	0.28
Queue Length 95th (ft)	8	69	2	0
Control Delay (s)	24.7	39.2	0.7	0.0
Lane LOS	C	E	A	
Approach Delay (s)	24.7	39.2	0.4	
Approach LOS	C	E		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	34	0	0	0	0	3	509	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	4	100	40	0	0	0	0	4	606	10
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.88	0.88	0.88	0.88	0.88		0.88					
vC, conflicting volume	641	628	311	328	633	7	618			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	308	293	0	0	299	7	283			7		
tC, single (s)	7.8	6.8	7.2	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.4	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	92	100	100			100		
cM capacity (veh/h)	481	510	912	853	527	1055	1116			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	140	307	312
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	559	724	1541	1700
Volume to Capacity	0.03	0.19	0.00	0.18
Queue Length 95th (ft)	2	18	0	0
Control Delay (s)	11.7	11.2	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.7	11.2	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.3		
Intersection Capacity Utilization		36.2%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
360: N Lincoln Street & W Wishkah Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	570	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	613	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	650	642	315	340	648	4	626			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	642	315	340	648	4	626			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	347	392	687	575	389	1080	952			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	317	319
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	418	481	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.9	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.9	13.0	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		35.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	525	65	0	30	1	121	41	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	559	69	0	32	1	129	44	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	628			0			643	621	316	326	655	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628			0			643	621	316	326	655	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	77	89	100
cM capacity (veh/h)	950			1565			329	403	686	565	383	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	293	348	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	408	504
Volume to Capacity	0.01	0.20	0.08	0.34
Queue Length 95th (ft)	1	0	7	38
Control Delay (s)	0.4	0.0	14.6	15.8
Lane LOS	A		B	C
Approach Delay (s)	0.2		14.6	15.8
Approach LOS			B	C

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	176	0	176	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	191	0	191	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	240			29			165	174	145	261	261	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240			29			165	174	145	261	261	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	67	100	99	100	100
cM capacity (veh/h)	1326			1584			804	574	908	504	634	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	240	191	5
Volume Left	0	0	0	5
Volume Right	17	191	0	0
cSH	1326	1584	574	504
Volume to Capacity	0.00	0.00	0.33	0.01
Queue Length 95th (ft)	0	0	36	1
Control Delay (s)	0.0	0.0	14.4	12.2
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	14.4	12.2
Approach LOS			B	B

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	10	220	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	11	239	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	253	240	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	253	240	240			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	735	799	1338			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	240
Volume Left	1	1	0
Volume Right	1	0	1
cSH	766	1338	1700
Volume to Capacity	0.00	0.00	0.14
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.7	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.7	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
371: Port Industrial Road & W 1st Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	507	6	16	3	5	5	0	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	39	452	5	5	583	7	18	3	6	6	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	583			456			1172	1124	454	1133	1130	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			456			1172	1124	454	1133	1130	586
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			87	98	99	96	100	90
cM capacity (veh/h)	949			1115			141	189	588	163	187	494

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	590	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	949	1700	1115	1700	174	406
Volume to Capacity	0.04	0.27	0.00	0.35	0.16	0.13
Queue Length 95th (ft)	3	0	0	0	14	11
Control Delay (s)	9.0	0.0	8.2	0.0	29.5	15.2
Lane LOS	A		A		D	C
Approach Delay (s)	0.7		0.1		29.5	15.2
Approach LOS					D	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
372: Port Industrial Road & Myrtle Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	446	110	8	14	38	52	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	361	11	16	485	120	9	15	41	57	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	604			372			1013	1040	366	1029	986	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	604			372			1013	1040	366	1029	986	545
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			95	93	94	69	97	95
cM capacity (veh/h)	936			1144			186	212	653	184	240	541

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	621	65	92
Volume Left	18	16	9	57
Volume Right	11	120	41	29
cSH	936	1144	359	237
Volume to Capacity	0.02	0.01	0.18	0.39
Queue Length 95th (ft)	2	1	16	44
Control Delay (s)	0.6	0.4	17.2	29.5
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	17.2	29.5
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	288	2	4	0	339	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	324	2	4	0	381	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381			326			356	737	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			326			356	737	325	406	357	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	89	95	100	100	100
cM capacity (veh/h)	1151			596			591	340	716	481	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	381	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	381	33
cSH	1151	1700	596	1700	453
Volume to Capacity	0.01	0.19	0.01	0.22	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.2	0.0	11.1	0.0	14.4
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.1		14.4
Approach LOS					B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/17/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	39	0	2	0	0	0	31	50	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	0	2	0	0	0	36	59	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		112	94	0	170	93	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		112	94	0	170	93	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	95	100	95	100
cM capacity (veh/h)	1554			1620		809	767	1076	711	777	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	48	0	95	40
Volume Left	46	0	0	2
Volume Right	2	0	59	0
cSH	1554	1700	932	773
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	332	4	15	450	31	10	7	24	32	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1770			1844			1759	1538		1747	
Flt Permitted		0.98			0.99			0.79	1.00		0.80	
Satd. Flow (perm)		1744			1824			1429	1538		1446	
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)	12	357	4	16	484	33	11	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	373	0	0	531	0	0	19	3	0	44	0
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		24.1			24.1			4.3	4.3		4.3	
Effective Green, g (s)		24.6			24.6			4.8	4.8		4.8	
Actuated g/C Ratio		0.66			0.66			0.13	0.13		0.13	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1147			1200			183	197		186	
v/s Ratio Prot												
v/s Ratio Perm		0.21			c0.29			0.01	0.00		c0.03	
v/c Ratio		0.32			0.44			0.10	0.02		0.24	
Uniform Delay, d1		2.8			3.1			14.4	14.2		14.7	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.3	0.0		0.7	
Delay (s)		3.0			3.4			14.7	14.3		15.3	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.0			3.4			14.4			15.3	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	37.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	2	262	19	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	203	17	2	298	22	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			220		506	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					302	
vCu, unblocked vol			220		506	203
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		97	100
cM capacity (veh/h)			1355		655	808

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	2	298	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1355	1700	672
Volume to Capacity	0.12	0.01	0.00	0.18	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.6
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.6
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	1207	11	0	0	0	0	55	24	16	81	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3343						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3343						3240			3066	
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)	128	1298	12	0	0	0	0	59	26	17	87	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1438	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2622						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.43									c0.03	
v/c Ratio		0.55						0.19			0.33	
Uniform Delay, d1		2.9						28.8			29.3	
Progression Factor		1.00						1.00			0.60	
Incremental Delay, d2		0.8						0.3			0.6	
Delay (s)		3.7						29.1			18.1	
Level of Service		A						C			B	
Approach Delay (s)		3.7			0.0			29.1			18.1	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1180	64	0	0	0	0	80	121	77	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3335						1711			1621	
Flt Permitted		1.00						1.00			0.73	
Satd. Flow (perm)		3335						1711			1204	
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)	18	1388	75	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	1477	0	0	0	0	0	211	0	0	187	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		30.4						14.8			14.8	
Effective Green, g (s)		30.4						14.8			14.8	
Actuated g/C Ratio		0.57						0.28			0.28	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1906						476			335	
v/s Ratio Prot								0.12				
v/s Ratio Perm		0.44									c0.16	
v/c Ratio		0.77						0.44			0.56	
Uniform Delay, d1		8.8						15.8			16.4	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.0						0.7			2.0	
Delay (s)		10.7						16.5			18.4	
Level of Service		B						B			B	
Approach Delay (s)		10.7			0.0			16.5			18.4	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	53.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1167	18	0	0	0	0	25	24	25	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3351						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3351						1597			1355	
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)	23	1203	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1244	0	0	0	0	0	29	0	0	55	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		30.8						4.5			4.5	
Effective Green, g (s)		31.3						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2368						180			153	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.37									c0.04	
v/c Ratio		0.53						0.16			0.36	
Uniform Delay, d1		3.0						17.8			18.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.4			1.4	
Delay (s)		3.2						18.2			19.6	
Level of Service		A						B			B	
Approach Delay (s)		3.2			0.0			18.2			19.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	44.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
418: Simpson Avenue/N Park Street #1012 & Ontario Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	1191	19	0	0	0	0	31	36	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	48	1228	20	0	0	0	0	32	37	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1247			1358	1335	624	764	1344	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1247			1358	1335	624	764	1344	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	78	91	79	69	100
cM capacity (veh/h)	1607			554			79	147	426	220	148	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	662	634	69	92
Volume Left	48	0	0	45
Volume Right	0	20	37	0
cSH	1607	1700	226	177
Volume to Capacity	0.03	0.37	0.31	0.52
Queue Length 95th (ft)	2	0	31	65
Control Delay (s)	0.9	0.0	27.7	45.4
Lane LOS	A		D	E
Approach Delay (s)	0.4		27.7	45.4
Approach LOS			D	E

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	859	12	0	0	0	0	415	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3323						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	934	13	0	0	0	0	451	9	0	0	0
RTOR Reduction (vph)	54	2	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	54	945	0	0	0	0	0	458	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	19.0	19.0						11.1				
Effective Green, g (s)	20.0	20.0						12.1				
Actuated g/C Ratio	0.50	0.50						0.30				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	874	1657						1054				
v/s Ratio Prot		c0.28						c0.13				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.57						0.43				
Uniform Delay, d1	5.2	7.0						11.3				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.5						0.3				
Delay (s)	5.2	7.5						11.5				
Level of Service	A	A						B				
Approach Delay (s)		7.3			0.0			11.5			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1076	70	0	0	0	0	27	171	41	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1575	1504		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.75	
Satd. Flow (perm)		2893	1300					1575	1504		1393	
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)	18	1157	75	0	0	0	0	29	184	44	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	47	47	0	0	0
Lane Group Flow (vph)	0	1175	66	0	0	0	0	61	58	0	78	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.2	53.2					7.8	7.8		7.8	
Effective Green, g (s)		53.7	53.7					8.3	8.3		8.3	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2219	997					187	178		165	
v/s Ratio Prot		c0.41						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.53	0.07					0.33	0.33		0.47	
Uniform Delay, d1		3.2	2.0					28.3	28.3		28.8	
Progression Factor		0.31	0.29					1.00	1.00		1.00	
Incremental Delay, d2		0.8	0.1					1.0	1.1		2.1	
Delay (s)		1.8	0.7					29.3	29.4		30.9	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.7			0.0			29.3			30.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1047	24	0	0	0	0	12	86	7	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2882						1314			1462	
Flt Permitted		1.00						1.00			0.87	
Satd. Flow (perm)		2882						1314			1291	
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)	24	1102	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	56	0	0	0	0
Lane Group Flow (vph)	0	1150	0	0	0	0	0	48	0	0	18	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.8						7.2			7.2	
Effective Green, g (s)		54.8						7.2			7.2	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2256						135			133	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.40									0.01	
v/c Ratio		0.51						0.36			0.14	
Uniform Delay, d1		2.7						29.2			28.6	
Progression Factor		0.39						1.00			1.00	
Incremental Delay, d2		0.6						1.6			0.5	
Delay (s)		1.7						30.9			29.0	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			30.9			29.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	906	16	0	0	0	0	0	29	289	216	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2887							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2887							1289	1681	1405	
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)	0	954	17	0	0	0	0	0	31	304	227	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	178	9	0
Lane Group Flow (vph)	0	969	0	0	0	0	0	0	4	83	261	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		28.6							9.5	18.4	18.4	
Effective Green, g (s)		29.1							10.0	18.9	18.9	
Actuated g/C Ratio		0.42							0.14	0.27	0.27	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1200							184	454	379	
v/s Ratio Prot		c0.34							c0.00	0.05	c0.19	
v/s Ratio Perm												
v/c Ratio		0.81							0.02	0.18	0.69	
Uniform Delay, d1		18.0							25.8	19.6	22.9	
Progression Factor		1.09							1.00	1.00	1.00	
Incremental Delay, d2		5.5							0.2	0.9	9.8	
Delay (s)		25.1							26.0	20.5	32.7	
Level of Service		C							C	C	C	
Approach Delay (s)		25.1			0.0			26.0			26.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	25.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	383	12	0	0	0	0	45	25	460	47	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2879						1418		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2879						1418		1681	1360	
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)	7	407	13	0	0	0	0	48	27	489	50	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	424	0	0	0	0	0	51	0	269	270	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		17.6						6.9		32.0	32.0	
Effective Green, g (s)		18.1						7.4		32.5	32.5	
Actuated g/C Ratio		0.26						0.11		0.46	0.46	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		744						150		780	631	
v/s Ratio Prot								c0.04		0.16	c0.20	
v/s Ratio Perm		0.15										
v/c Ratio		0.57						0.34		0.34	0.43	
Uniform Delay, d1		22.6						29.0		12.0	12.5	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.0						1.3		1.2	2.1	
Delay (s)		23.6						30.4		13.2	14.7	
Level of Service		C						C		B	B	
Approach Delay (s)		23.6			0.0			30.4			13.9	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	309	0	517	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1791		2111		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1791		2111		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	343	0	574	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	343	0	574	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		29.3		29.3		
Effective Green, g (s)		29.3		29.3		
Actuated g/C Ratio		0.74		0.74		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1332		1570		
v/s Ratio Prot		0.19		c0.27		
v/s Ratio Perm						
v/c Ratio		0.26		0.37		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.1		
Delay (s)		1.7		1.9		
Level of Service		A		A		
Approach Delay (s)	1.7			1.9	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	39.4	Sum of lost time (s)	10.1
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	894	22	18	163	0	0	90	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3490			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3490			3041			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	931	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	78	0
Lane Group Flow (vph)	0	0	0	0	967	0	0	189	0	0	269	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					49.1			11.9			11.9	
Effective Green, g (s)					49.6			12.4			12.4	
Actuated g/C Ratio					0.71			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2473			539			531	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.28			0.06				
v/c Ratio					0.39			0.35			0.51	
Uniform Delay, d1					4.1			25.3			26.0	
Progression Factor					1.47			1.04			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					6.5			26.6			26.8	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.5			26.6			26.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1196	19	13	381	0	0	51	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
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3353			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3353			1679			1710	1615
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)	0	0	0	15	1272	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	50
Lane Group Flow (vph)	0	0	0	0	1305	0	0	419	0	0	54	240
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2060			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.39			c0.25				0.15
v/c Ratio					0.63			0.92			0.12	0.55
Uniform Delay, d1					8.5			24.8			19.2	21.8
Progression Factor					0.61			1.00			1.00	1.00
Incremental Delay, d2					1.4			26.1			0.5	4.9
Delay (s)					6.6			50.8			19.7	26.7
Level of Service					A			D			B	C
Approach Delay (s)		0.0			6.6			50.8			25.6	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	70.0	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)	0	0	0	44	1120	92	32	68	0	0	211	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3567	1554		1815			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3567	1554		1551			1794	
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)	0	0	0	46	1179	97	34	72	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1225	54	0	106	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					29.0	29.0		14.7			14.7	
Effective Green, g (s)					29.0	29.0		14.7			14.7	
Actuated g/C Ratio					0.56	0.56		0.28			0.28	
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)					2001	872		441			510	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.34	0.04		0.07				
v/c Ratio					0.61	0.06		0.24			0.59	
Uniform Delay, d1					7.6	5.2		14.2			15.9	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.3			1.7	
Delay (s)					8.2	5.2		14.5			17.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			7.9			14.5			17.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	51.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1280	5	18	7	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.96			1.00	
Satd. Flow (prot)					3324			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3324			1676			1777	
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)	0	0	0	35	1362	5	19	7	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1402	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.9			1.3			1.3	
Effective Green, g (s)					30.4			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2514			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.42			c0.02				
v/c Ratio					0.56			0.35			0.29	
Uniform Delay, d1					2.1			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			2.8			2.0	
Delay (s)					2.3			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.3			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	42	1171	12	52	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	46	1287	13	57	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1300			0			758	1392	0	1393	1386	650
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1300			0			758	1392	0	1393	1386	650
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			77	90	100	100	86	97
cM capacity (veh/h)	529			1622			251	137	1084	93	140	417

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	690	657	71	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	215	188
Volume to Capacity	0.03	0.39	0.33	0.17
Queue Length 95th (ft)	2	0	35	15
Control Delay (s)	0.8	0.0	29.8	28.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		29.8	28.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
471: Sumner Avenue/N Alder Street/Lincoln Street #1011 & 23rd Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1159	2	471	23	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3361		1618	1630				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1618	1630				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1302	2	529	26	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	158	158	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1304	0	117	122	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					26.4		10.0	10.0				0.6
Effective Green, g (s)					27.4		11.0	11.0				1.6
Actuated g/C Ratio					0.53		0.21	0.21				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1771		342	345				50
v/s Ratio Prot					c0.39							
v/s Ratio Perm							0.07	0.08				c0.00
v/c Ratio					0.74		0.34	0.35				0.00
Uniform Delay, d1					9.5		17.4	17.5				24.4
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.6		0.6	0.6				0.0
Delay (s)					11.1		18.0	18.1				24.5
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.1			18.1			24.5	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1222	184	0	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1286	194	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1286				1286	643
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1286				1286	643
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	78
cM capacity (veh/h)	535				153	411

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	643	643	194	89
Volume Left	0	0	0	0
Volume Right	0	0	194	89
cSH	1700	1700	1700	411
Volume to Capacity	0.38	0.38	0.11	0.22
Queue Length 95th (ft)	0	0	0	20
Control Delay (s)	0.0	0.0	0.0	16.2
Lane LOS				C
Approach Delay (s)	0.0			16.2
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
479: Sumner Avenue/N Alder Street/Lincoln Street #1011 & 6th Street

8/17/2009

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	474	1066	0	0	8	98	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	489	1099	0	0	8	101	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			489	489	489	1588	1588	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			489	489	489	1588	1588	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	6	100	
cM capacity (veh/h)			480	579	490	108	413	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	855	733	8	101
Volume Left	0	0	8	0
Volume Right	366	733	0	0
cSH	1700	1700	490	108
Volume to Capacity	0.50	0.43	0.02	0.94
Queue Length 95th (ft)	0	0	1	144
Control Delay (s)	0.0	0.0	12.5	143.6
Lane LOS			B	F
Approach Delay (s)	0.0		133.7	
Approach LOS			F	

Intersection Summary			
Average Delay	8.6		
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	52	0	0	1186	0	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	0	0	1289	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	0	0	1289	0	508
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.3			46.7		69.0
Effective Green, g (s)	13.8			47.2		69.0
Actuated g/C Ratio	0.20			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	354			2398		2787
v/s Ratio Prot	0.03			c0.37		
v/s Ratio Perm						c0.18
v/c Ratio	0.16			0.54		0.18
Uniform Delay, d1	22.8			5.4		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.8		0.1
Delay (s)	22.9			6.3		0.1
Level of Service	C			A		A
Approach Delay (s)	22.9			6.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	609	577	467	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1694	1845	3467	
Flt Permitted			0.39	1.00	1.00	
Satd. Flow (perm)			695	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	634	601	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	634	601	518	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			49.8	54.3	25.2	
Effective Green, g (s)			50.8	54.8	25.7	
Actuated g/C Ratio			0.74	0.79	0.37	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			875	1465	1291	
v/s Ratio Prot			c0.26	0.33	0.15	
v/s Ratio Perm			c0.27			
v/c Ratio			0.72	0.41	0.40	
Uniform Delay, d1			4.3	2.2	16.0	
Progression Factor			0.45	0.08	1.00	
Incremental Delay, d2			2.2	0.7	0.1	
Delay (s)			4.2	0.9	16.1	
Level of Service			A	A	B	
Approach Delay (s)	0.0			2.6	16.1	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	947	218	0	0	0	21	0	646	143	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.97				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2449				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2449				
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)	1018	234	0	0	0	23	0	695	154	0	0	0
RTOR Reduction (vph)	355	91	0	0	0	22	0	19	0	0	0	0
Lane Group Flow (vph)	266	540	0	0	0	1	0	830	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	23%	17%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	24.2	24.2				2.5		31.3				
Effective Green, g (s)	24.7	24.7				1.5		31.8				
Actuated g/C Ratio	0.35	0.35				0.02		0.45				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	571	587				27		1113				
v/s Ratio Prot								c0.34				
v/s Ratio Perm	0.16	0.33				c0.00						
v/c Ratio	0.47	0.92				0.05		0.75				
Uniform Delay, d1	17.5	21.7				33.6		15.8				
Progression Factor	1.22	0.33				1.00		1.00				
Incremental Delay, d2	1.5	13.8				0.3		2.8				
Delay (s)	22.9	21.0				33.9		18.5				
Level of Service	C	C				C		B				
Approach Delay (s)		22.0			33.9			18.5			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	21	0	0	158	18	95	1527	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1631			4632				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1269			1631			4632				
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)	17	22	0	0	166	19	100	1607	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	179	0	0	1713	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	16%	5%	38%	10%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		13.1			13.1			47.9				
Effective Green, g (s)		13.6			13.6			48.4				
Actuated g/C Ratio		0.19			0.19			0.69				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		247			317			3203				
v/s Ratio Prot					c0.11							
v/s Ratio Perm		0.03						0.37				
v/c Ratio		0.16			0.57			0.53				
Uniform Delay, d1		23.4			25.5			5.3				
Progression Factor		1.06			1.00			0.99				
Incremental Delay, d2		0.3			2.3			0.4				
Delay (s)		25.0			27.8			5.7				
Level of Service		C			C			A				
Approach Delay (s)		25.0			27.8			5.7			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	64	1579	96	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1712	1504		4412				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4412				
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)	95	152	0	0	86	120	67	1662	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	18	0	8	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	78	0	1822	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	9%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.3			17.3	17.3		44.2				
Effective Green, g (s)		17.8			17.8	17.8		44.2				
Actuated g/C Ratio		0.25			0.25	0.25		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		316			435	382		2786				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.41				
v/c Ratio		0.78			0.22	0.20		0.65				
Uniform Delay, d1		24.3			20.6	20.5		8.1				
Progression Factor		0.94			1.00	1.00		2.07				
Incremental Delay, d2		11.1			0.3	0.3		1.1				
Delay (s)		34.0			20.9	20.8		17.9				
Level of Service		C			C	C		B				
Approach Delay (s)		34.0			20.8			17.9			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	19.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	76	31	0	0	71	32	28	1575	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1785			4230				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4230				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	87	36	0	0	82	37	32	1810	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	14	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	105	0	0	1891	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	10%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.5			11.5			50.0				
Effective Green, g (s)		12.0			12.0			50.0				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		227			306			3021				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.09						0.45				
v/c Ratio		0.54			0.34			0.63				
Uniform Delay, d1		26.5			25.5			5.2				
Progression Factor		1.60			1.00			0.24				
Incremental Delay, d2		2.6			0.7			0.8				
Delay (s)		45.1			26.2			2.0				
Level of Service		D			C			A				
Approach Delay (s)		45.1			26.2			2.0			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
308: Broadway Street & W Heron Street #1012

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	233	25	0	0	32	18	54	1749	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4275				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4275				
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)	248	27	0	0	34	19	57	1861	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	8	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	275	0	0	45	0	0	1938	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	9%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.4			20.4			39.6				
Effective Green, g (s)		20.9			20.9			41.1				
Actuated g/C Ratio		0.30			0.30			0.59				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		315			423			2510				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.45				
v/c Ratio		0.87			0.11			0.77				
Uniform Delay, d1		23.3			17.8			10.9				
Progression Factor		0.67			1.00			0.62				
Incremental Delay, d2		22.1			0.1			1.9				
Delay (s)		37.7			17.9			8.7				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.9			8.7			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1721	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1374			4277				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1374			4277				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	60	17	0	0	8	11	25	1956	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	9	0	0	1998	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	9%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		151			183			3220				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.47				
v/c Ratio		0.51			0.05			0.62				
Uniform Delay, d1		28.2			26.5			4.0				
Progression Factor		0.82			1.00			0.23				
Incremental Delay, d2		2.6			0.1			0.6				
Delay (s)		25.9			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		25.9			26.6			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
310: S "I" Street & W Wishkah Street #1011

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	56	37	34	35	0	0	0	0	17	1428	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4270	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1185						4270	
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)	0	62	41	38	39	0	0	0	0	19	1587	40
RTOR Reduction (vph)	0	25	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	78	0	0	77	0	0	0	0	0	1644	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	9%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.5			8.5						53.0	
Effective Green, g (s)		9.0			9.0						53.0	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		181			152						3233	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.06						0.38	
v/c Ratio		0.43			0.51						0.51	
Uniform Delay, d1		28.1			28.4						3.4	
Progression Factor		1.00			0.97						0.66	
Incremental Delay, d2		1.6			2.6						0.5	
Delay (s)		29.8			30.2						2.7	
Level of Service		C			C						A	
Approach Delay (s)		29.8			30.2			0.0			2.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	145	35	24	68	0	0	0	0	8	1287	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1451			1471						4219	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1451			1325						4219	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	158	38	26	74	0	0	0	0	9	1399	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	100	0	0	0	0	0	1485	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	10%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		13.9			13.9						46.1	
Effective Green, g (s)		14.4			14.4						47.6	
Actuated g/C Ratio		0.21			0.21						0.68	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		298			273						2869	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.08						0.35	
v/c Ratio		0.61			0.37						0.52	
Uniform Delay, d1		25.2			23.9						5.5	
Progression Factor		1.00			0.97						0.24	
Incremental Delay, d2		3.5			0.7						0.6	
Delay (s)		28.7			23.9						1.9	
Level of Service		C			C						A	
Approach Delay (s)		28.7			23.9			0.0			1.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1302	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1448			1471						4235	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1448			1339						4235	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	82	22	17	49	0	0	0	0	21	1415	27
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	87	0	0	66	0	0	0	0	0	1461	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	10%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.4			8.4						53.1	
Effective Green, g (s)		8.9			8.9						53.1	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		184			170						3213	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.35	
v/c Ratio		0.47			0.39						0.45	
Uniform Delay, d1		28.4			28.1						3.1	
Progression Factor		1.00			0.51						0.22	
Incremental Delay, d2		1.9			1.4						0.4	
Delay (s)		30.3			15.7						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.3			15.7			0.0			1.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	104	15	57	84	0	0	0	0	131	1165	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1831			1826						4388	
Flt Permitted		1.00			0.85						1.00	
Satd. Flow (perm)		1831			1577						4388	
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)	0	109	16	60	88	0	0	0	0	138	1226	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	148	0	0	0	0	0	1393	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	10%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		536			462						2601	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.32	
v/c Ratio		0.22			0.32						0.54	
Uniform Delay, d1		18.7			19.3						8.5	
Progression Factor		1.00			0.98						0.83	
Incremental Delay, d2		0.9			1.7						0.7	
Delay (s)		19.6			20.7						7.8	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.7			0.0			7.8	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	28	213	0	0	0	0	21	463	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.93	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1234						2350	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1234						2350	1400
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)	0	0	0	30	227	0	0	0	0	22	493	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	144	170
Lane Group Flow (vph)	0	0	0	0	257	0	0	0	0	0	770	245
Heavy Vehicles (%)	2%	2%	2%	64%	17%	2%	2%	2%	2%	0%	27%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					20.1						40.9	40.9
Effective Green, g (s)					20.6						41.4	41.4
Actuated g/C Ratio					0.29						0.59	0.59
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					363						1390	828
v/s Ratio Prot												
v/s Ratio Perm					0.21						0.33	0.18
v/c Ratio					0.71						0.55	0.30
Uniform Delay, d1					22.0						8.7	7.1
Progression Factor					0.90						0.65	0.11
Incremental Delay, d2					5.9						1.4	0.8
Delay (s)					25.8						7.0	1.6
Level of Service					C						A	A
Approach Delay (s)		0.0			25.8			0.0			5.3	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1109	72	0	0	0	0	0	0	19	452	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		0.99									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3000									2343	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3000									2343	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1275	83	0	0	0	0	0	0	22	520	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	1353	0	0	0	0	0	0	0	0	537	0
Heavy Vehicles (%)	0%	4%	58%	2%	2%	2%	2%	2%	2%	0%	32%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		37.6									23.4	
Effective Green, g (s)		38.1									23.9	
Actuated g/C Ratio		0.54									0.34	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1633									800	
v/s Ratio Prot		c0.45										
v/s Ratio Perm											0.23	
v/c Ratio		0.83									0.67	
Uniform Delay, d1		13.2									19.7	
Progression Factor		0.80									1.46	
Incremental Delay, d2		4.3									1.9	
Delay (s)		14.8									30.6	
Level of Service		B									C	
Approach Delay (s)		14.8			0.0			0.0			30.6	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1461	511	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1114			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1114			
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)	124	692	0	0	0	0	0	1538	538	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	804	0	0	0	0	0	1538	501	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	16%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		18.8						42.7	42.7			
Effective Green, g (s)		18.8						43.2	43.2			
Actuated g/C Ratio		0.27						0.62	0.62			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1229						1892	687			
v/s Ratio Prot								c0.50				
v/s Ratio Perm		0.18							0.45			
v/c Ratio		0.65						0.81	0.73			
Uniform Delay, d1		22.7						10.3	9.3			
Progression Factor		0.88						1.81	1.98			
Incremental Delay, d2		1.2						3.3	5.6			
Delay (s)		21.1						21.9	24.0			
Level of Service		C						C	C			
Approach Delay (s)		21.1			0.0			22.5			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
320: S "G" Street #1011 & W Heron Street #122

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	667	411	76	1407	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3113			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3113			2943				
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)	0	0	0	0	688	424	78	1451	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1094	0	0	1523	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	12%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					24.0			37.0				
Effective Green, g (s)					24.5			37.5				
Actuated g/C Ratio					0.35			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1090			1577				
v/s Ratio Prot					c0.35							
v/s Ratio Perm								0.52				
v/c Ratio					1.00			0.97				
Uniform Delay, d1					22.8			15.6				
Progression Factor					1.00			0.75				
Incremental Delay, d2					28.1			11.1				
Delay (s)					50.9			22.8				
Level of Service					D			C				
Approach Delay (s)		0.0			50.9			22.8			0.0	
Approach LOS		A			D			C			A	

Intersection Summary			
HCM Average Control Delay	34.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1232	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2948									4240	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4240	
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)	0	290	45	0	0	0	0	0	0	394	1325	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	51	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1668	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	10%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.7									48.3	
Effective Green, g (s)		13.2									48.8	
Actuated g/C Ratio		0.19									0.70	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		556									2956	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.39	
v/c Ratio		0.56									0.56	
Uniform Delay, d1		25.8									5.3	
Progression Factor		1.00									0.71	
Incremental Delay, d2		1.3									0.7	
Delay (s)		27.1									4.4	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			4.4	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	438	296	0	0	0	0	0	1272	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.98						1.00	
Satd. Flow (prot)				1114	3094						4415	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1114	3094						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	476	322	0	0	0	0	0	1383	68
RTOR Reduction (vph)	0	0	0	23	23	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	239	513	0	0	0	0	0	1445	0
Heavy Vehicles (%)	2%	2%	2%	18%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				19.7	19.7						41.3	
Effective Green, g (s)				20.2	20.2						41.8	
Actuated g/C Ratio				0.29	0.29						0.60	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				321	893						2636	
v/s Ratio Prot				c0.21	0.17						c0.33	
v/s Ratio Perm												
v/c Ratio				0.74	0.57						0.55	
Uniform Delay, d1				22.5	21.2						8.4	
Progression Factor				1.01	1.10						1.00	
Incremental Delay, d2				2.9	0.3						0.8	
Delay (s)				25.7	23.7						9.3	
Level of Service				C	C						A	
Approach Delay (s)		0.0			24.4			0.0			9.3	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
323: W Wishkah Street #121 #122 & S Chehalis Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1238	36	28	1027	2	349	8	18	17	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.98	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3311		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3125		1727	3311		1681	1672			1762	
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)	13	1456	42	33	1208	2	411	9	21	20	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1510	0	33	1210	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	9%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.3		5.4	80.7		17.3	17.3			5.0	
Effective Green, g (s)		72.3		5.4	81.7		18.3	18.3			6.0	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1915		79	2292		261	259			90	
v/s Ratio Prot				0.02	c0.37		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.53		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.8		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.56		1.00	1.00			1.00	
Incremental Delay, d2		3.4		2.8	0.7		22.4	19.9			1.7	
Delay (s)		20.5		59.5	5.6		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.5			7.0			69.6			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1575	102	53	1079	0	215	8	109	51	19	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3312		1727	3312		1665	1552			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3312		1727	3312		1665	1552			1751	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	1641	106	55	1124	0	224	8	114	53	20	25
RTOR Reduction (vph)	0	3	0	0	0	0	0	66	0	0	13	0
Lane Group Flow (vph)	26	1744	0	55	1124	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	9%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.3		7.6	66.3		14.5	14.5			11.6	
Effective Green, g (s)	6.6	66.3		7.6	67.3		15.5	15.5			12.6	
Actuated g/C Ratio	0.06	0.56		0.06	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1861		111	1889		219	204			187	
v/s Ratio Prot	0.02	c0.53		0.03	c0.34		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.27	0.94		0.50	0.60		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.9		53.3	16.5		49.9	47.6			49.5	
Progression Factor	0.78	0.60		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	8.6		2.5	1.4		21.0	2.2			2.1	
Delay (s)	42.3	22.9		55.9	17.9		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		23.2			19.6			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	913	3	516	853	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.93	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3260		3038	1517		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3260		3038	1517		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1127	4	637	1053	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1131	0	1153	537	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	13%	7%	7%	14%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	36.2		38.0	86.2		38.0
Effective Green, g (s)	38.2		40.0	86.2		40.0
Actuated g/C Ratio	0.44		0.46	1.00		0.46
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1445		1410	1517		1232
v/s Ratio Prot	c0.35		c0.38	0.35		0.14
v/s Ratio Perm						
v/c Ratio	0.78		0.82	0.35		0.31
Uniform Delay, d1	20.5		20.0	0.0		14.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	2.7		3.7	0.6		0.1
Delay (s)	23.2		23.7	0.6		14.5
Level of Service	C		C	A		B
Approach Delay (s)	23.2		16.4		14.5	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	86.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	20	0	0	8	19	635	1	3	340	55
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	21	0	0	8	20	668	1	3	358	58
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1117	1110	394	1096	1138	671	422			670		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1117	1110	394	1096	1138	671	422			670		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	178	205	655	182	197	459	1136			919		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	676	3	416
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	655	459	1136	1136	919	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.24
Queue Length 95th (ft)	2	1	1	1	0	0
Control Delay (s)	10.7	13.0	8.2	0.3	8.9	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.0	0.5		0.1	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	38.6%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
332: S M Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	24	1	10	0	2	4	14	590	2	2	292	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	26	1	11	0	2	4	15	634	2	2	314	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1004	1001	330	995	1015	635	345			637		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1004	1001	330	995	1015	635	345			637		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	98	100	99	99	99			100		
cM capacity (veh/h)	216	240	714	218	236	480	1219			947		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	637	2	345
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	270	357	1219	1700	947	1700
Volume to Capacity	0.14	0.02	0.01	0.37	0.00	0.20
Queue Length 95th (ft)	12	1	1	0	0	0
Control Delay (s)	20.5	15.3	8.0	0.0	8.8	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	20.5	15.3	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	2	393	2	2	222	164
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	2	452	2	2	255	189
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	818	813	349	721	906	453	444			454		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	818	813	349	721	906	453	444			454		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	92	100	100	100	98	99	100			100		
cM capacity (veh/h)	289	314	698	329	266	589	1127			1117		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	454	2	444
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	189
cSH	314	351	1127	1700	1117	1700
Volume to Capacity	0.08	0.03	0.00	0.27	0.00	0.26
Queue Length 95th (ft)	7	2	0	0	0	0
Control Delay (s)	17.5	15.6	8.2	0.0	8.2	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	17.5	15.6	0.0		0.0	
Approach LOS	C	C				

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	36.3%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
336: Simpson Avenue/N Park Street & W State Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	370	30	0	0	0	1	82	1	2	227	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	389	32	0	0	0	1	86	1	2	239	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			421			539	405	405	449	421	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			421			539	405	405	449	421	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	84	100	100	54	99
cM capacity (veh/h)	1604			1149			288	536	648	455	524	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	421	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	532	539
Volume to Capacity	0.00	0.00	0.17	0.47
Queue Length 95th (ft)	0	0	15	63
Control Delay (s)	0.0	0.0	13.1	17.6
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.1	17.6
Approach LOS			B	C

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	573	8	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	599	1	3	616	9	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1222	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1222	599
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		95	99
cM capacity (veh/h)			948		159	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	619	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	181
Volume to Capacity	0.35	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	26.1
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	26.1
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	550	0	2	598	10	0	1	0	8	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	598	0	2	650	11	0	1	0	9	2	8
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			601			1288	1284	603	1279	1279	657
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			601			1288	1284	603	1279	1279	657
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	94	99	98
cM capacity (veh/h)	912			959			136	164	500	138	161	457

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	663	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	912	959	164	198
Volume to Capacity	0.01	0.00	0.01	0.09
Queue Length 95th (ft)	1	0	1	8
Control Delay (s)	0.3	0.1	27.1	25.1
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	27.1	25.1
Approach LOS			D	D

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	553	1	1	523	1	71	0	163	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	601	1	1	568	1	77	0	177	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	570			602			1176	1176	602	1352	1176	569
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570			602			1176	1176	602	1352	1176	569
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			54	100	65	99	100	100
cM capacity (veh/h)	988			961			169	191	504	82	191	522

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	603	571	254	2
Volume Left	1	1	77	1
Volume Right	1	1	177	1
cSH	988	961	315	142
Volume to Capacity	0.00	0.00	0.81	0.02
Queue Length 95th (ft)	0	0	167	1
Control Delay (s)	0.0	0.0	50.9	30.7
Lane LOS	A	A	F	D
Approach Delay (s)	0.0	0.0	50.9	30.7
Approach LOS			F	D

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	630	34	186	468	11	6	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	692	37	204	514	12	7	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			730			1777	1749	713	1749	1762	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			730			1777	1749	713	1749	1762	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			65			84	96	99	59	98	94
cM capacity (veh/h)	1021			577			42	53	434	45	52	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	780	731	11	54
Volume Left	51	204	7	19
Volume Right	37	12	2	34
cSH	1021	577	54	108
Volume to Capacity	0.05	0.35	0.20	0.50
Queue Length 95th (ft)	4	40	17	56
Control Delay (s)	1.3	9.5	88.1	67.3
Lane LOS	A	A	F	F
Approach Delay (s)	1.3	9.5	88.1	67.3
Approach LOS			F	F

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
354: W Wishkah Street & S Garfield St

8/17/2009

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	649	0	0	27	664
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	705	0	0	29	722
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			780	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			780	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			357	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	705	29	722
Volume Left	0	29	0
Volume Right	705	0	0
cSH	1700	1578	1700
Volume to Capacity	0.41	0.02	0.42
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	662	5	0	192	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	727	5	0	211	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1458	1458	1460	0
vC1, stage 1 conf vol			1458	1458	0	
vC2, stage 2 conf vol			0	0	1460	
vCu, unblocked vol	0		1458	1458	1460	0
tC, single (s)	4.2		7.1	7.3	6.5	6.2
tC, 2 stage (s)			6.1	6.3	5.5	
tF (s)	2.3		3.5	4.8	4.0	3.3
p0 queue free %	54		100	0	100	100
cM capacity (veh/h)	1597		80	47	95	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	485	248	211
Volume Left	485	242	0
Volume Right	0	5	0
cSH	1597	1597	47
Volume to Capacity	0.46	0.46	4.46
Queue Length 95th (ft)	61	61	Err
Control Delay (s)	9.1	9.0	Err
Lane LOS	A	A	F
Approach Delay (s)	9.1		Err
Approach LOS			F

Intersection Summary			
Average Delay	2242.0		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	21	3	0	0	169	7	12	830	20	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	3	0	0	192	8	14	943	23	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	603	993	0	984	982	483	0			966		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	603	993	0	984	982	483	0			966		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	99	100	100	22	99	99			100		
cM capacity (veh/h)	136	245	1091	201	247	532	1600			709		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	485	494
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	144	253	1600	1700
Volume to Capacity	0.19	0.79	0.01	0.29
Queue Length 95th (ft)	17	149	1	0
Control Delay (s)	35.6	57.6	0.3	0.0
Lane LOS	E	F	A	
Approach Delay (s)	35.6	57.6	0.1	
Approach LOS	E	F		

Intersection Summary				
Average Delay		10.5		
Intersection Capacity Utilization		46.6%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	6	0	0	16	2	5	844	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	6	0	0	17	2	5	879	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	460	895	2	897	892	442	0			884		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460	895	2	897	892	442	0			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	94	100	100			100		
cM capacity (veh/h)	464	281	1086	233	282	569	1593			761		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	445	445
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	357	299	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.26
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	15.5	17.8	0.1	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.5	17.8	0.1	
Approach LOS	C	C		

Intersection Summary				
Average Delay		0.6		
Intersection Capacity Utilization		37.3%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	31	797	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	105	9	36	927	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	600	1013	4	1011	1009	471	3			938		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600	1013	4	1011	1009	471	3			938		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	94	97	100	100	49	98	98			100		
cM capacity (veh/h)	200	204	1019	162	205	492	1592			724		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	499	470
Volume Left	12	0	36	0
Volume Right	0	9	0	7
cSH	202	215	1592	1700
Volume to Capacity	0.09	0.53	0.02	0.28
Queue Length 95th (ft)	8	69	2	0
Control Delay (s)	24.7	39.2	0.7	0.0
Lane LOS	C	E	A	
Approach Delay (s)	24.7	39.2	0.4	
Approach LOS	C	E		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	34	0	0	0	0	3	509	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	4	100	40	0	0	0	0	4	606	10
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	641	628	311	328	633	7	618			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	363	348	0	13	353	7	338			7		
tC, single (s)	7.8	6.8	7.2	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.4	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	92	100	100			100		
cM capacity (veh/h)	446	483	931	852	501	1055	1087			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	140	307	312
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	535	709	1541	1700
Volume to Capacity	0.03	0.20	0.00	0.18
Queue Length 95th (ft)	3	18	0	0
Control Delay (s)	12.0	11.3	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	11.3	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.4		
Intersection Capacity Utilization		36.2%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
360: N Lincoln Street & W Wishkah Street

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	570	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	613	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	650	642	315	340	648	4	626			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	642	315	340	648	4	626			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	347	392	687	575	389	1080	952			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	317	319
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	418	481	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.9	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.9	13.0	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		35.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	525	65	0	30	1	121	41	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	559	69	0	32	1	129	44	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	628			0			643	621	316	326	655	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628			0			643	621	316	326	655	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	77	89	100
cM capacity (veh/h)	950			1565			329	403	686	565	383	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	293	348	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	408	504
Volume to Capacity	0.01	0.20	0.08	0.34
Queue Length 95th (ft)	1	0	7	38
Control Delay (s)	0.4	0.0	14.6	15.8
Lane LOS	A		B	C
Approach Delay (s)	0.2		14.6	15.8
Approach LOS			B	C

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	176	0	176	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	191	0	191	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	240			29			165	174	145	261	261	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240			29			165	174	145	261	261	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	67	100	99	100	100
cM capacity (veh/h)	1326			1584			804	574	908	504	634	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	240	191	5
Volume Left	0	0	0	5
Volume Right	17	191	0	0
cSH	1326	1584	574	504
Volume to Capacity	0.00	0.00	0.33	0.01
Queue Length 95th (ft)	0	0	36	1
Control Delay (s)	0.0	0.0	14.4	12.2
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	14.4	12.2
Approach LOS			B	B

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	10	220	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	11	239	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	253	240	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	253	240	240			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	735	799	1338			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	240
Volume Left	1	1	0
Volume Right	1	0	1
cSH	766	1338	1700
Volume to Capacity	0.00	0.00	0.14
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.7	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.7	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
371: Port Industrial Road & W 1st Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	507	6	16	3	5	5	0	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	39	452	5	5	583	7	18	3	6	6	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	583			456			1172	1124	454	1133	1130	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			456			1172	1124	454	1133	1130	586
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			87	98	99	96	100	90
cM capacity (veh/h)	949			1115			141	189	588	163	187	494

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	590	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	949	1700	1115	1700	174	406
Volume to Capacity	0.04	0.27	0.00	0.35	0.16	0.13
Queue Length 95th (ft)	3	0	0	0	14	11
Control Delay (s)	9.0	0.0	8.2	0.0	29.5	15.2
Lane LOS	A		A		D	C
Approach Delay (s)	0.7		0.1		29.5	15.2
Approach LOS					D	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
372: Port Industrial Road & Myrtle Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	446	110	8	14	38	52	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	361	11	16	485	120	9	15	41	57	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	604			372			1013	1040	366	1029	986	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	604			372			1013	1040	366	1029	986	545
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			95	93	94	69	97	95
cM capacity (veh/h)	936			1144			186	212	653	184	240	541

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	621	65	92
Volume Left	18	16	9	57
Volume Right	11	120	41	29
cSH	936	1144	359	237
Volume to Capacity	0.02	0.01	0.18	0.39
Queue Length 95th (ft)	2	1	16	44
Control Delay (s)	0.6	0.4	17.2	29.5
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	17.2	29.5
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	288	2	4	0	339	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	324	2	4	0	381	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381			326			356	737	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			326			356	737	325	406	357	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	89	95	100	100	100
cM capacity (veh/h)	1151			596			591	340	716	481	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	381	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	381	33
cSH	1151	1700	596	1700	453
Volume to Capacity	0.01	0.19	0.01	0.22	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.2	0.0	11.1	0.0	14.4
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.1		14.4
Approach LOS					B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/17/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	39	0	2	0	0	0	31	50	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	0	2	0	0	0	36	59	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		112	94	0	170	93	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		112	94	0	170	93	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	95	100	95	100
cM capacity (veh/h)	1554			1620		809	767	1076	711	777	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	48	0	95	40
Volume Left	46	0	0	2
Volume Right	2	0	59	0
cSH	1554	1700	932	773
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	382	4	15	500	31	10	7	24	32	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1666			1767			1759	1538		1747	
Flt Permitted		0.98			0.99			0.81	1.00		0.80	
Satd. Flow (perm)		1643			1747			1461	1538		1446	
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)	12	411	4	16	538	33	11	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	22	0	12	0
Lane Group Flow (vph)	0	427	0	0	586	0	0	19	4	0	44	0
Heavy Vehicles (%)	7%	14%	7%	2%	7%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		26.2			26.2			5.7	5.7		5.7	
Effective Green, g (s)		26.7			26.7			6.2	6.2		6.2	
Actuated g/C Ratio		0.65			0.65			0.15	0.15		0.15	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1073			1140			221	233		219	
v/s Ratio Prot												
v/s Ratio Perm		0.26			c0.34			0.01	0.00		c0.03	
v/c Ratio		0.40			0.51			0.09	0.02		0.20	
Uniform Delay, d1		3.3			3.7			14.9	14.8		15.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.4			0.2	0.0		0.5	
Delay (s)		3.6			4.1			15.1	14.8		15.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.6			4.1			14.9			15.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	40.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	52	262	19	53
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	203	17	59	298	22	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			220		619	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					416	
vCu, unblocked vol			220		619	203
tC, single (s)			5.0		6.5	7.1
tC, 2 stage (s)					5.5	
tF (s)			3.0		3.6	4.1
p0 queue free %			94		96	91
cM capacity (veh/h)			955		560	656

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	59	298	82
Volume Left	0	0	59	0	22
Volume Right	0	17	0	0	60
cSH	1700	1700	955	1700	627
Volume to Capacity	0.12	0.01	0.06	0.18	0.13
Queue Length 95th (ft)	0	0	5	0	11
Control Delay (s)	0.0	0.0	9.0	0.0	11.6
Lane LOS			A		B
Approach Delay (s)	0.0		1.5		11.6
Approach LOS					B

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	1257	11	0	0	0	0	55	24	16	81	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3285						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3285						3240			3066	
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)	128	1352	12	0	0	0	0	59	26	17	87	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1492	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2576						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.45									c0.03	
v/c Ratio		0.58						0.19			0.33	
Uniform Delay, d1		3.0						28.8			29.3	
Progression Factor		1.00						1.00			0.58	
Incremental Delay, d2		1.0						0.3			0.6	
Delay (s)		3.9						29.1			17.5	
Level of Service		A						C			B	
Approach Delay (s)		3.9			0.0			29.1			17.5	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1230	64	0	0	0	0	80	121	77	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3275						1711			1621	
Flt Permitted		1.00						1.00			0.69	
Satd. Flow (perm)		3275						1711			1149	
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)	18	1447	75	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1536	0	0	0	0	0	214	0	0	187	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		33.8						15.1			15.1	
Effective Green, g (s)		33.8						15.1			15.1	
Actuated g/C Ratio		0.59						0.27			0.27	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1945						454			305	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.47									c0.16	
v/c Ratio		0.79						0.47			0.61	
Uniform Delay, d1		8.8						17.5			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.1						0.8			3.6	
Delay (s)		11.0						18.3			22.0	
Level of Service		B						B			C	
Approach Delay (s)		11.0			0.0			18.3			22.0	
Approach LOS		B			A			B			C	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1217	18	0	0	0	0	25	24	25	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3289						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3289						1597			1355	
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)	23	1255	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1296	0	0	0	0	0	29	0	0	55	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		32.0						4.5			4.5	
Effective Green, g (s)		32.5						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2349						175			149	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.39									c0.04	
v/c Ratio		0.55						0.16			0.37	
Uniform Delay, d1		3.1						18.4			18.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.3						0.4			1.5	
Delay (s)		3.3						18.8			20.3	
Level of Service		A						B			C	
Approach Delay (s)		3.3			0.0			18.8			20.3	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	45.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
418: Simpson Avenue/N Park Street #1012 & Ontario Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	1241	19	0	0	0	0	31	36	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	48	1279	20	0	0	0	0	32	37	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1299			1409	1386	649	790	1396	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1299			1409	1386	649	790	1396	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	77	91	78	66	100
cM capacity (veh/h)	1607			529			71	136	410	207	138	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	688	659	69	92
Volume Left	48	0	0	45
Volume Right	0	20	37	0
cSH	1607	1700	213	165
Volume to Capacity	0.03	0.39	0.32	0.55
Queue Length 95th (ft)	2	0	34	71
Control Delay (s)	0.8	0.0	29.9	50.9
Lane LOS	A		D	F
Approach Delay (s)	0.4		29.9	50.9
Approach LOS			D	F

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	909	12	0	0	0	0	415	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3230						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3230						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	988	13	0	0	0	0	451	9	0	0	0
RTOR Reduction (vph)	52	1	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	56	1000	0	0	0	0	0	458	0	0	0	0
Heavy Vehicles (%)	3%	6%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	20.6	20.6						11.4				
Effective Green, g (s)	21.6	21.6						12.4				
Actuated g/C Ratio	0.51	0.51						0.30				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	901	1661						1032				
v/s Ratio Prot		c0.31						c0.13				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.60						0.44				
Uniform Delay, d1	5.1	7.2						12.0				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.6						0.3				
Delay (s)	5.1	7.8						12.3				
Level of Service	A	A						B				
Approach Delay (s)		7.5			0.0			12.3			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1126	70	0	0	0	0	27	171	41	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2840	1300					1575	1504		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.75	
Satd. Flow (perm)		2840	1300					1575	1504		1395	
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)	18	1211	75	0	0	0	0	29	184	44	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	40	40	0	0	0
Lane Group Flow (vph)	0	1229	66	0	0	0	0	68	65	0	78	0
Heavy Vehicles (%)	6%	8%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.1	53.1					7.9	7.9		7.9	
Effective Green, g (s)		53.6	53.6					8.4	8.4		8.4	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2175	995					189	180		167	
v/s Ratio Prot		c0.43						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.57	0.07					0.36	0.36		0.47	
Uniform Delay, d1		3.4	2.0					28.3	28.3		28.7	
Progression Factor		0.31	0.34					1.00	1.00		1.00	
Incremental Delay, d2		1.0	0.1					1.2	1.2		2.1	
Delay (s)		2.0	0.8					29.5	29.5		30.8	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.9			0.0			29.5			30.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1097	24	0	0	0	0	12	86	7	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2832						1314			1462	
Flt Permitted		1.00						1.00			0.87	
Satd. Flow (perm)		2832						1314			1297	
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)	24	1155	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	48	0	0	0	0
Lane Group Flow (vph)	0	1203	0	0	0	0	0	56	0	0	18	0
Heavy Vehicles (%)	6%	8%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.5						7.5			7.5	
Effective Green, g (s)		54.5						7.5			7.5	
Actuated g/C Ratio		0.78						0.11			0.11	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2205						141			139	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.42									0.01	
v/c Ratio		0.55						0.40			0.13	
Uniform Delay, d1		3.0						29.1			28.3	
Progression Factor		0.36						1.00			1.00	
Incremental Delay, d2		0.6						1.8			0.4	
Delay (s)		1.7						31.0			28.7	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			31.0			28.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	956	16	0	0	0	0	0	29	289	216	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2809							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2809							1289	1681	1405	
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)	0	1006	17	0	0	0	0	0	31	304	227	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	175	10	0
Lane Group Flow (vph)	0	1021	0	0	0	0	0	0	4	86	260	0
Heavy Vehicles (%)	2%	9%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		29.1							9.5	17.9	17.9	
Effective Green, g (s)		29.6							10.0	18.4	18.4	
Actuated g/C Ratio		0.42							0.14	0.26	0.26	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1188							184	442	369	
v/s Ratio Prot		c0.36							c0.00	0.05	c0.19	
v/s Ratio Perm												
v/c Ratio		0.86							0.02	0.20	0.71	
Uniform Delay, d1		18.3							25.8	20.0	23.3	
Progression Factor		1.10							1.00	1.00	1.00	
Incremental Delay, d2		7.5							0.2	1.0	10.8	
Delay (s)		27.6							26.0	21.0	34.2	
Level of Service		C							C	C	C	
Approach Delay (s)		27.6			0.0			26.0			27.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	433	12	0	0	0	0	45	25	460	47	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2733						1418		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2733						1418		1681	1360	
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)	7	461	13	0	0	0	0	48	27	489	50	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	479	0	0	0	0	0	51	0	269	270	0
Heavy Vehicles (%)	6%	12%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		19.9						6.9		29.7	29.7	
Effective Green, g (s)		20.4						7.4		30.2	30.2	
Actuated g/C Ratio		0.29						0.11		0.43	0.43	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		796						150		725	587	
v/s Ratio Prot								c0.04		0.16	c0.20	
v/s Ratio Perm		0.18										
v/c Ratio		0.60						0.34		0.37	0.46	
Uniform Delay, d1		21.3						29.0		13.5	14.1	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.3						1.3		1.5	2.6	
Delay (s)		22.6						30.4		14.9	16.7	
Level of Service		C						C		B	B	
Approach Delay (s)		22.6			0.0			30.4			15.8	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	359	0	567	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1678		2031		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1678		2031		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	399	0	630	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	399	0	630	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	11%	2%	6%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		30.5		30.5		
Effective Green, g (s)		30.5		30.5		
Actuated g/C Ratio		0.75		0.75		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1264		1530		
v/s Ratio Prot		0.24		c0.31		
v/s Ratio Perm						
v/c Ratio		0.32		0.41		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.2		
Delay (s)		1.8		2.0		
Level of Service		A		A		
Approach Delay (s)	1.8			2.0	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	40.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	944	22	18	163	0	0	90	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3395			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3395			3044			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	983	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	68	0
Lane Group Flow (vph)	0	0	0	0	1019	0	0	189	0	0	279	0
Heavy Vehicles (%)	2%	2%	2%	3%	6%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					48.8			12.2			12.2	
Effective Green, g (s)					49.3			12.7			12.7	
Actuated g/C Ratio					0.70			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2391			552			543	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.30			0.06				
v/c Ratio					0.43			0.34			0.51	
Uniform Delay, d1					4.4			25.0			25.9	
Progression Factor					1.39			1.03			1.00	
Incremental Delay, d2					0.5			0.3			0.8	
Delay (s)					6.6			26.2			26.7	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.6			26.2			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1246	19	13	381	0	0	51	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
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3290			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3290			1679			1710	1615
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)	0	0	0	15	1326	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	44
Lane Group Flow (vph)	0	0	0	0	1359	0	0	419	0	0	54	246
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2021			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.41			c0.25				0.15
v/c Ratio					0.67			0.92			0.12	0.56
Uniform Delay, d1					8.9			24.8			19.2	21.9
Progression Factor					0.65			1.00			1.00	1.00
Incremental Delay, d2					1.7			26.1			0.5	5.1
Delay (s)					7.5			50.8			19.7	27.0
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.5			50.8			25.9	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1170	92	32	68	0	0	211	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3500	1554		1815			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3500	1554		1550			1794	
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)	0	0	0	46	1232	97	34	72	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1278	55	0	106	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	3%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					30.6	30.6		15.0			15.0	
Effective Green, g (s)					30.6	30.6		15.0			15.0	
Actuated g/C Ratio					0.57	0.57		0.28			0.28	
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)					1998	887		434			502	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.37	0.04		0.07				
v/c Ratio					0.64	0.06		0.24			0.60	
Uniform Delay, d1					7.8	5.1		14.9			16.7	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.7	0.0		0.3			1.9	
Delay (s)					8.5	5.1		15.2			18.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.2			15.2			18.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1330	5	18	7	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.96			1.00	
Satd. Flow (prot)					3262			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3262			1676			1777	
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)	0	0	0	35	1415	5	19	7	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1455	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	5%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.9			1.3			1.3	
Effective Green, g (s)					30.4			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2467			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.45			c0.02				
v/c Ratio					0.59			0.35			0.29	
Uniform Delay, d1					2.2			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.4			2.8			2.0	
Delay (s)					2.5			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.5			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	42	1221	12	52	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	46	1342	13	57	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1355			0			785	1447	0	1448	1441	677
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1355			0			785	1447	0	1448	1441	677
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			76	89	100	100	85	97
cM capacity (veh/h)	504			1622			237	127	1084	84	130	400

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	717	684	71	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	202	175
Volume to Capacity	0.03	0.40	0.35	0.18
Queue Length 95th (ft)	2	0	38	16
Control Delay (s)	0.8	0.0	32.3	30.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		32.3	30.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
471: Sumner Avenue/N Alder Street/Lincoln Street #1011 & 23rd Street

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1209	2	471	23	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3297		1618	1630				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3297		1618	1630				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1358	2	529	26	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	156	156	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1360	0	119	124	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.3		10.1	10.1				0.7
Effective Green, g (s)					29.3		11.1	11.1				1.7
Actuated g/C Ratio					0.54		0.21	0.21				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1786		332	334				51
v/s Ratio Prot					c0.41							
v/s Ratio Perm							0.07	0.08				c0.00
v/c Ratio					0.76		0.36	0.37				0.00
Uniform Delay, d1					9.7		18.4	18.5				25.4
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					2.0		0.7	0.7				0.0
Delay (s)					11.6		19.1	19.2				25.4
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.6			19.2			25.4	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations			↑↑	↱		↱
Volume (veh/h)	0	0	1272	184	0	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1339	194	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1339				1339	669
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1339				1339	669
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	77
cM capacity (veh/h)	511				142	395

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	669	669	194	89
Volume Left	0	0	0	0
Volume Right	0	0	194	89
cSH	1700	1700	1700	395
Volume to Capacity	0.39	0.39	0.11	0.23
Queue Length 95th (ft)	0	0	0	21
Control Delay (s)	0.0	0.0	0.0	16.8
Lane LOS				C
Approach Delay (s)	0.0			16.8
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
479: Sumner Avenue/N Alder Street/Lincoln Street #1011 & 6th Street

8/17/2009

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	474	1116	0	0	8	98	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	489	1151	0	0	8	101	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			489	489	489	1639	1639	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			489	489	489	1639	1639	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	0	100	
cM capacity (veh/h)			480	579	490	100	395	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	872	767	8	101
Volume Left	0	0	8	0
Volume Right	384	767	0	0
cSH	1700	1700	490	100
Volume to Capacity	0.51	0.45	0.02	1.01
Queue Length 95th (ft)	0	0	1	155
Control Delay (s)	0.0	0.0	12.5	170.1
Lane LOS			B	F
Approach Delay (s)	0.0		158.2	
Approach LOS			F	

Intersection Summary			
Average Delay	9.9		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	52	0	0	1236	0	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3438		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3438		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	0	0	1343	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	0	0	1343	0	508
Heavy Vehicles (%)	2%	2%	3%	5%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.4			48.1		70.5
Effective Green, g (s)	13.9			48.6		70.5
Actuated g/C Ratio	0.20			0.69		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	349			2370		2787
v/s Ratio Prot	0.03			c0.39		
v/s Ratio Perm						c0.18
v/c Ratio	0.16			0.57		0.18
Uniform Delay, d1	23.5			5.6		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	23.6			6.5		0.1
Level of Service	C			A		A
Approach Delay (s)	23.6			6.5	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	4.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	659	577	467	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1631	1845	3467	
Flt Permitted			0.38	1.00	1.00	
Satd. Flow (perm)			658	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	686	601	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	686	601	518	0
Heavy Vehicles (%)	2%	2%	7%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			51.2	55.7	25.0	
Effective Green, g (s)			52.2	56.2	25.5	
Actuated g/C Ratio			0.74	0.80	0.36	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			856	1471	1254	
v/s Ratio Prot			c0.30	0.33	0.15	
v/s Ratio Perm			c0.29			
v/c Ratio			0.80	0.41	0.41	
Uniform Delay, d1			5.5	2.2	16.9	
Progression Factor			0.63	0.08	1.00	
Incremental Delay, d2			4.5	0.7	0.1	
Delay (s)			7.9	0.8	17.0	
Level of Service			A	A	B	
Approach Delay (s)	0.0			4.6	17.0	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	18.3
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	947	218	0	0	0	21	0	482	307	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.94				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2315				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2315				
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)	1018	234	0	0	0	23	0	518	330	0	0	0
RTOR Reduction (vph)	362	91	0	0	0	23	0	100	0	0	0	0
Lane Group Flow (vph)	259	540	0	0	0	0	0	748	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	10%	48%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	24.2	24.2				2.3		31.5				
Effective Green, g (s)	24.7	24.7				1.3		32.0				
Actuated g/C Ratio	0.35	0.35				0.02		0.46				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	571	587				24		1058				
v/s Ratio Prot								c0.32				
v/s Ratio Perm	0.16	0.33				c0.00						
v/c Ratio	0.45	0.92				0.02		0.71				
Uniform Delay, d1	17.4	21.7				33.7		15.2				
Progression Factor	1.32	0.31				1.00		1.00				
Incremental Delay, d2	1.5	14.7				0.1		2.2				
Delay (s)	24.6	21.3				33.8		17.4				
Level of Service	C	C				C		B				
Approach Delay (s)		22.9			33.8			17.4			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	21	0	0	322	18	45	1413	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1320			4887				
Flt Permitted		0.84			1.00			1.00				
Satd. Flow (perm)		1257			1320			4887				
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)	17	22	0	0	339	19	47	1487	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	355	0	0	1540	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	45%	5%	4%	6%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		23.8			23.8			37.2				
Effective Green, g (s)		24.3			24.3			37.7				
Actuated g/C Ratio		0.35			0.35			0.54				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		436			458			2632				
v/s Ratio Prot					c0.27							
v/s Ratio Perm		0.03						0.32				
v/c Ratio		0.09			0.77			0.58				
Uniform Delay, d1		15.4			20.4			10.9				
Progression Factor		0.69			1.00			0.80				
Incremental Delay, d2		0.1			8.0			0.6				
Delay (s)		10.7			28.4			9.4				
Level of Service		B			C			A				
Approach Delay (s)		10.7			28.4			9.4			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	64	1465	96	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1712	1504		4522				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4522				
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)	95	152	0	0	86	120	67	1542	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	24	0	9	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	72	0	1701	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	6%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.3			17.3	17.3		44.2				
Effective Green, g (s)		17.8			17.8	17.8		44.2				
Actuated g/C Ratio		0.25			0.25	0.25		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		316			435	382		2855				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.38				
v/c Ratio		0.78			0.22	0.19		0.60				
Uniform Delay, d1		24.3			20.6	20.4		7.6				
Progression Factor		0.96			1.00	1.00		1.83				
Incremental Delay, d2		11.3			0.3	0.2		0.8				
Delay (s)		34.6			20.9	20.7		14.8				
Level of Service		C			C	C		B				
Approach Delay (s)		34.6			20.8			14.8			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	17.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
307: S "K" Street & W Heron Street #1012

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	76	31	0	0	71	32	28	1461	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1785			4381				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4381				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	87	36	0	0	82	37	32	1679	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	19	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	100	0	0	1760	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.5			11.5			50.0				
Effective Green, g (s)		12.0			12.0			50.0				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		227			306			3129				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.09						0.40				
v/c Ratio		0.54			0.33			0.56				
Uniform Delay, d1		26.5			25.5			4.8				
Progression Factor		1.61			1.00			0.26				
Incremental Delay, d2		2.6			0.6			0.6				
Delay (s)		45.1			26.1			1.8				
Level of Service		D			C			A				
Approach Delay (s)		45.1			26.1			1.8			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	233	25	0	0	32	18	54	1635	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4390				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4390				
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)	248	27	0	0	34	19	57	1739	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	275	0	0	42	0	0	1816	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.4			20.4			39.6				
Effective Green, g (s)		20.9			20.9			41.1				
Actuated g/C Ratio		0.30			0.30			0.59				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		315			423			2578				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.41				
v/c Ratio		0.87			0.10			0.70				
Uniform Delay, d1		23.3			17.7			10.2				
Progression Factor		0.67			1.00			0.57				
Incremental Delay, d2		22.1			0.1			1.4				
Delay (s)		37.7			17.8			7.2				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.8			7.2			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1607	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1374			4395				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1374			4395				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	60	17	0	0	8	11	25	1826	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	9	0	0	1868	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		151			183			3309				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.43				
v/c Ratio		0.51			0.05			0.56				
Uniform Delay, d1		28.2			26.5			3.7				
Progression Factor		0.82			1.00			0.26				
Incremental Delay, d2		2.6			0.1			0.5				
Delay (s)		25.9			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		25.9			26.6			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	56	37	34	35	0	0	0	0	17	1314	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4426	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1185						4426	
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)	0	62	41	38	39	0	0	0	0	19	1460	40
RTOR Reduction (vph)	0	35	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	68	0	0	77	0	0	0	0	0	1517	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.5			8.5						53.0	
Effective Green, g (s)		9.0			9.0						53.0	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		181			152						3351	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.06						0.34	
v/c Ratio		0.38			0.51						0.45	
Uniform Delay, d1		27.9			28.4						3.1	
Progression Factor		1.00			0.94						0.69	
Incremental Delay, d2		1.3			2.6						0.4	
Delay (s)		29.2			29.4						2.6	
Level of Service		C			C						A	
Approach Delay (s)		29.2			29.4			0.0			2.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
311: Broadway Street & W Wishkah Street #1011

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	145	35	24	68	0	0	0	0	8	1173	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1451			1471						4404	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1451			1325						4404	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	158	38	26	74	0	0	0	0	9	1275	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	100	0	0	0	0	0	1361	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		13.9			13.9						46.1	
Effective Green, g (s)		14.4			14.4						47.6	
Actuated g/C Ratio		0.21			0.21						0.68	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		298			273						2995	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.08						0.31	
v/c Ratio		0.61			0.37						0.45	
Uniform Delay, d1		25.2			23.9						5.2	
Progression Factor		1.00			0.95						0.26	
Incremental Delay, d2		3.5			0.8						0.5	
Delay (s)		28.7			23.5						1.8	
Level of Service		C			C						A	
Approach Delay (s)		28.7			23.5			0.0			1.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
312: S "K" Street & W Wishkah Street #1011

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1188	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1448			1471						4429	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1448			1339						4429	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	82	22	17	49	0	0	0	0	21	1291	27
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	87	0	0	66	0	0	0	0	0	1337	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.4			8.4						53.1	
Effective Green, g (s)		8.9			8.9						53.1	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		184			170						3360	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.30	
v/c Ratio		0.47			0.39						0.40	
Uniform Delay, d1		28.4			28.1						2.9	
Progression Factor		1.00			0.55						0.24	
Incremental Delay, d2		1.9			1.4						0.3	
Delay (s)		30.3			16.9						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.3			16.9			0.0			1.0	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	104	15	57	84	0	0	0	0	131	1051	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						0.99	
Satd. Flow (prot)		1831			1826						4531	
Flt Permitted		1.00			0.85						0.99	
Satd. Flow (perm)		1831			1577						4531	
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)	0	109	16	60	88	0	0	0	0	138	1106	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	148	0	0	0	0	0	1273	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		536			462						2686	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.28	
v/c Ratio		0.22			0.32						0.47	
Uniform Delay, d1		18.7			19.3						8.1	
Progression Factor		1.00			0.97						0.86	
Incremental Delay, d2		0.9			1.7						0.6	
Delay (s)		19.6			20.5						7.5	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.5			0.0			7.5	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	192	163	0	0	0	0	21	349	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.92	0.85
Flt Protected					0.97						1.00	1.00
Satd. Flow (prot)					977						2476	1400
Flt Permitted					0.97						1.00	1.00
Satd. Flow (perm)					977						2476	1400
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)	0	0	0	204	173	0	0	0	0	22	371	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	218	218
Lane Group Flow (vph)	0	0	0	0	377	0	0	0	0	0	582	189
Heavy Vehicles (%)	2%	2%	2%	91%	5%	2%	2%	2%	2%	0%	15%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					29.0						32.0	32.0
Effective Green, g (s)					29.5						32.5	32.5
Actuated g/C Ratio					0.42						0.46	0.46
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					412						1150	650
v/s Ratio Prot												
v/s Ratio Perm					0.39						0.24	0.14
v/c Ratio					0.92						0.51	0.29
Uniform Delay, d1					19.1						13.1	11.6
Progression Factor					1.01						0.20	0.19
Incremental Delay, d2					20.9						1.4	1.0
Delay (s)					40.3						4.1	3.2
Level of Service					D						A	A
Approach Delay (s)		0.0			40.3			0.0			3.8	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1109	22	0	0	0	0	0	0	19	502	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3112									2274	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3112									2274	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1275	25	0	0	0	0	0	0	22	577	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	1299	0	0	0	0	0	0	0	0	595	0
Heavy Vehicles (%)	0%	4%	10%	2%	2%	2%	2%	2%	2%	0%	36%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		36.1									24.9	
Effective Green, g (s)		36.6									25.4	
Actuated g/C Ratio		0.52									0.36	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1627									825	
v/s Ratio Prot		c0.42										
v/s Ratio Perm											0.26	
v/c Ratio		0.80									0.72	
Uniform Delay, d1		13.7									19.2	
Progression Factor		0.82									1.29	
Incremental Delay, d2		3.6									2.4	
Delay (s)		14.8									27.3	
Level of Service		B									C	
Approach Delay (s)		14.8			0.0			0.0			27.3	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1461	397	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1242			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1242			
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)	124	692	0	0	0	0	0	1538	418	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	804	0	0	0	0	0	1538	381	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	4%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		18.8						42.7	42.7			
Effective Green, g (s)		18.8						43.2	43.2			
Actuated g/C Ratio		0.27						0.62	0.62			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1229						1892	766			
v/s Ratio Prot								c0.50				
v/s Ratio Perm		0.18							0.31			
v/c Ratio		0.65						0.81	0.50			
Uniform Delay, d1		22.7						10.3	7.4			
Progression Factor		0.88						1.87	2.15			
Incremental Delay, d2		1.2						3.4	2.0			
Delay (s)		21.2						22.7	17.9			
Level of Service		C						C	B			
Approach Delay (s)		21.2			0.0			21.7			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	553	411	76	1407	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3254			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3254			2943				
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)	0	0	0	0	570	424	78	1451	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	976	0	0	1524	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					23.4			37.6				
Effective Green, g (s)					23.9			38.1				
Actuated g/C Ratio					0.34			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1111			1602				
v/s Ratio Prot					c0.30							
v/s Ratio Perm								0.52				
v/c Ratio					0.88			0.95				
Uniform Delay, d1					21.7			15.1				
Progression Factor					1.00			0.76				
Incremental Delay, d2					8.1			9.1				
Delay (s)					29.7			20.6				
Level of Service					C			C				
Approach Delay (s)		0.0			29.7			20.6			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1118	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2948									4361	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4361	
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)	0	290	45	0	0	0	0	0	0	394	1202	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	57	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1539	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.7									48.3	
Effective Green, g (s)		13.2									48.8	
Actuated g/C Ratio		0.19									0.70	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		556									3040	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.35	
v/c Ratio		0.56									0.51	
Uniform Delay, d1		25.8									5.0	
Progression Factor		1.00									0.65	
Incremental Delay, d2		1.3									0.5	
Delay (s)		27.1									3.8	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			3.8	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	324	296	0	0	0	0	0	1272	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.99						1.00	
Satd. Flow (prot)				1264	3277						4415	
Flt Permitted				0.95	0.99						1.00	
Satd. Flow (perm)				1264	3277						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	352	322	0	0	0	0	0	1383	68
RTOR Reduction (vph)	0	0	0	25	25	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	193	431	0	0	0	0	0	1445	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				16.8	16.8						44.2	
Effective Green, g (s)				17.3	17.3						44.7	
Actuated g/C Ratio				0.25	0.25						0.64	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				312	810						2819	
v/s Ratio Prot				c0.15	0.13						c0.33	
v/s Ratio Perm												
v/c Ratio				0.62	0.53						0.51	
Uniform Delay, d1				23.4	22.8						6.8	
Progression Factor				1.20	1.25						1.00	
Incremental Delay, d2				1.9	0.4						0.7	
Delay (s)				30.0	29.0						7.5	
Level of Service				C	C						A	
Approach Delay (s)		0.0			29.3			0.0			7.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
323: W Wishkah Street #121 #122 & S Chehalis Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1238	36	28	1027	2	349	8	18	17	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.98	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3311		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3125		1727	3311		1681	1672			1762	
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)	13	1456	42	33	1208	2	411	9	21	20	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1510	0	33	1210	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	9%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.3		5.4	80.7		17.3	17.3			5.0	
Effective Green, g (s)		72.3		5.4	81.7		18.3	18.3			6.0	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1915		79	2292		261	259			90	
v/s Ratio Prot				0.02	c0.37		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.53		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.8		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.56		1.00	1.00			1.00	
Incremental Delay, d2		3.4		2.8	0.7		22.4	19.9			1.7	
Delay (s)		20.5		59.5	5.6		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.5			7.0			69.6			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1575	102	53	1079	0	215	8	109	51	19	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3312		1727	3312		1665	1552			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3312		1727	3312		1665	1552			1751	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	1641	106	55	1124	0	224	8	114	53	20	25
RTOR Reduction (vph)	0	3	0	0	0	0	0	66	0	0	13	0
Lane Group Flow (vph)	26	1744	0	55	1124	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	9%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.3		7.6	66.3		14.5	14.5			11.6	
Effective Green, g (s)	6.6	66.3		7.6	67.3		15.5	15.5			12.6	
Actuated g/C Ratio	0.06	0.56		0.06	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1861		111	1889		219	204			187	
v/s Ratio Prot	0.02	c0.53		0.03	c0.34		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.27	0.94		0.50	0.60		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.9		53.3	16.5		49.9	47.6			49.5	
Progression Factor	0.78	0.60		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	8.6		2.5	1.4		21.0	2.2			2.1	
Delay (s)	42.3	22.9		55.9	17.9		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		23.2			19.6			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	963	3	516	903	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.93	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3176		3002	1491		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3176		3002	1491		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1189	4	637	1115	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1193	0	1195	557	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	16%	7%	7%	16%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	39.2		40.5	91.7		40.5
Effective Green, g (s)	41.2		42.5	91.7		42.5
Actuated g/C Ratio	0.45		0.46	1.00		0.46
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1427		1391	1491		1231
v/s Ratio Prot	c0.38		c0.40	0.37		0.14
v/s Ratio Perm						
v/c Ratio	0.84		0.86	0.37		0.31
Uniform Delay, d1	22.3		21.9	0.0		15.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	4.3		5.4	0.7		0.1
Delay (s)	26.6		27.4	0.7		15.5
Level of Service	C		C	A		B
Approach Delay (s)	26.6		18.9		15.5	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	91.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	20	0	0	8	19	635	1	3	340	55
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	21	0	0	8	20	668	1	3	358	58
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1117	1110	394	1096	1138	671	422			670		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1117	1110	394	1096	1138	671	422			670		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	178	205	655	182	197	459	1136			919		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	676	3	416
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	655	459	1136	1136	919	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.24
Queue Length 95th (ft)	2	1	1	1	0	0
Control Delay (s)	10.7	13.0	8.2	0.3	8.9	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.0	0.5		0.1	
Approach LOS	B	B				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	24	1	10	0	2	4	14	590	2	2	292	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	26	1	11	0	2	4	15	634	2	2	314	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1004	1001	330	995	1015	635	345			637		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1004	1001	330	995	1015	635	345			637		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	98	100	99	99	99			100		
cM capacity (veh/h)	216	240	714	218	236	480	1219			947		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	637	2	345
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	270	357	1219	1700	947	1700
Volume to Capacity	0.14	0.02	0.01	0.37	0.00	0.20
Queue Length 95th (ft)	12	1	1	0	0	0
Control Delay (s)	20.5	15.3	8.0	0.0	8.8	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	20.5	15.3	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	2	557	2	2	222	328
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	2	640	2	2	255	377
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1101	1095	444	909	1283	641	632			643		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1101	1095	444	909	1283	641	632			643		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	88	100	99	100	96	99	100			100		
cM capacity (veh/h)	183	214	618	244	158	459	960			952		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	643	2	632
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	377
cSH	203	223	960	1700	952	1700
Volume to Capacity	0.12	0.05	0.00	0.38	0.00	0.37
Queue Length 95th (ft)	10	4	0	0	0	0
Control Delay (s)	25.3	22.0	8.8	0.0	8.8	0.0
Lane LOS	D	C	A		A	
Approach Delay (s)	25.3	22.0	0.0		0.0	
Approach LOS	D	C				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	534	30	0	0	0	1	82	1	2	227	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	562	32	0	0	0	1	86	1	2	239	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			594			712	578	578	622	594	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			594			712	578	578	622	594	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	80	100	99	43	99
cM capacity (veh/h)	1604			992			188	428	518	336	418	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	594	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	423	433
Volume to Capacity	0.00	0.00	0.21	0.59
Queue Length 95th (ft)	0	0	19	93
Control Delay (s)	0.0	0.0	15.8	24.7
Lane LOS			C	C
Approach Delay (s)	0.0	0.0	15.8	24.7
Approach LOS			C	C

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	573	8	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	599	1	3	616	9	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1222	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1222	599
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		95	99
cM capacity (veh/h)			948		159	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	619	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	181
Volume to Capacity	0.35	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	26.1
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	26.1
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	550	0	2	598	10	0	1	0	8	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	598	0	2	650	11	0	1	0	9	2	8
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			601			1288	1284	603	1279	1279	657
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			601			1288	1284	603	1279	1279	657
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	94	99	98
cM capacity (veh/h)	912			959			136	164	500	138	161	457

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	663	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	912	959	164	198
Volume to Capacity	0.01	0.00	0.01	0.09
Queue Length 95th (ft)	1	0	1	8
Control Delay (s)	0.3	0.1	27.1	25.1
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	27.1	25.1
Approach LOS			D	D

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
352: W Wishkah St & Williams Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	553	1	1	523	1	71	0	163	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	601	1	1	568	1	77	0	177	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	570			602			1176	1176	602	1352	1176	569
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570			602			1176	1176	602	1352	1176	569
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			54	100	65	99	100	100
cM capacity (veh/h)	988			961			169	191	504	82	191	522

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	603	571	254	2
Volume Left	1	1	77	1
Volume Right	1	1	177	1
cSH	988	961	315	142
Volume to Capacity	0.00	0.00	0.81	0.02
Queue Length 95th (ft)	0	0	167	1
Control Delay (s)	0.0	0.0	50.9	30.7
Lane LOS	A	A	F	D
Approach Delay (s)	0.0	0.0	50.9	30.7
Approach LOS			F	D

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	630	34	186	468	11	6	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	692	37	204	514	12	7	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			730			1777	1749	713	1749	1762	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			730			1777	1749	713	1749	1762	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			65			84	96	99	59	98	94
cM capacity (veh/h)	1021			577			42	53	434	45	52	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	780	731	11	54
Volume Left	51	204	7	19
Volume Right	37	12	2	34
cSH	1021	577	54	108
Volume to Capacity	0.05	0.35	0.20	0.50
Queue Length 95th (ft)	4	40	17	56
Control Delay (s)	1.3	9.5	88.1	67.3
Lane LOS	A	A	F	F
Approach Delay (s)	1.3	9.5	88.1	67.3
Approach LOS			F	F

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
354: W Wishkah Street & S Garfield St

8/12/2009

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	649	0	0	27	664
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	705	0	0	29	722
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			780	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			780	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			357	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	705	29	722
Volume Left	0	29	0
Volume Right	705	0	0
cSH	1700	1578	1700
Volume to Capacity	0.41	0.02	0.42
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
355: S Garfield St & W Heron Street

8/12/2009

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	662	5	0	192	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	727	5	0	211	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1458	1458	1460	0
vC1, stage 1 conf vol			1458	1458	0	
vC2, stage 2 conf vol			0	0	1460	
vCu, unblocked vol	0		1458	1458	1460	0
tC, single (s)	4.2		7.1	7.3	6.5	6.2
tC, 2 stage (s)			6.1	6.3	5.5	
tF (s)	2.3		3.5	4.8	4.0	3.3
p0 queue free %	54		100	0	100	100
cM capacity (veh/h)	1597		80	47	95	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	485	248	211
Volume Left	485	242	0
Volume Right	0	5	0
cSH	1597	1597	47
Volume to Capacity	0.46	0.46	4.46
Queue Length 95th (ft)	61	61	Err
Control Delay (s)	9.1	9.0	Err
Lane LOS	A	A	F
Approach Delay (s)	9.1		Err
Approach LOS			F

Intersection Summary			
Average Delay	2242.0		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	21	3	0	0	169	7	12	830	20	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	3	0	0	192	8	14	943	23	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	603	993	0	984	982	483	0			966		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	603	993	0	984	982	483	0			966		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	99	100	100	22	99	99			100		
cM capacity (veh/h)	136	245	1091	201	247	532	1600			709		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	485	494
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	144	253	1600	1700
Volume to Capacity	0.19	0.79	0.01	0.29
Queue Length 95th (ft)	17	149	1	0
Control Delay (s)	35.6	57.6	0.3	0.0
Lane LOS	E	F	A	
Approach Delay (s)	35.6	57.6	0.1	
Approach LOS	E	F		

Intersection Summary				
Average Delay		10.5		
Intersection Capacity Utilization		46.6%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	6	0	0	16	2	5	844	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	6	0	0	17	2	5	879	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	460	895	2	897	892	442	0			884		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460	895	2	897	892	442	0			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	94	100	100			100		
cM capacity (veh/h)	464	281	1086	233	282	569	1593			761		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	445	445
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	357	299	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.26
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	15.5	17.8	0.1	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.5	17.8	0.1	
Approach LOS	C	C		

Intersection Summary				
Average Delay		0.6		
Intersection Capacity Utilization		37.3%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	31	797	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	105	9	36	927	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	600	1013	4	1011	1009	471	3			938		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600	1013	4	1011	1009	471	3			938		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	94	97	100	100	49	98	98			100		
cM capacity (veh/h)	200	204	1019	162	205	492	1592			724		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	499	470
Volume Left	12	0	36	0
Volume Right	0	9	0	7
cSH	202	215	1592	1700
Volume to Capacity	0.09	0.53	0.02	0.28
Queue Length 95th (ft)	8	69	2	0
Control Delay (s)	24.7	39.2	0.7	0.0
Lane LOS	C	E	A	
Approach Delay (s)	24.7	39.2	0.4	
Approach LOS	C	E		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
359: N Washington Street & W Wishkah Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	34	0	0	0	0	3	509	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	4	100	40	0	0	0	0	4	606	10
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.88	0.88	0.88	0.88	0.88		0.88					
vC, conflicting volume	641	628	311	328	633	7	618			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	308	293	0	0	299	7	283			7		
tC, single (s)	7.8	6.8	7.2	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.4	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	92	100	100			100		
cM capacity (veh/h)	481	510	912	853	527	1055	1116			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	140	307	312
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	559	724	1541	1700
Volume to Capacity	0.03	0.19	0.00	0.18
Queue Length 95th (ft)	2	18	0	0
Control Delay (s)	11.7	11.2	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.7	11.2	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.3		
Intersection Capacity Utilization		36.2%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
360: N Lincoln Street & W Wishkah Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	570	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	613	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	650	642	315	340	648	4	626			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	642	315	340	648	4	626			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	347	392	687	575	389	1080	952			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	317	319
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	418	481	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.9	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.9	13.0	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		35.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	525	65	0	30	1	121	41	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	559	69	0	32	1	129	44	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	628			0			643	621	316	326	655	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628			0			643	621	316	326	655	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	77	89	100
cM capacity (veh/h)	950			1565			329	403	686	565	383	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	293	348	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	408	504
Volume to Capacity	0.01	0.20	0.08	0.34
Queue Length 95th (ft)	1	0	7	38
Control Delay (s)	0.4	0.0	14.6	15.8
Lane LOS	A		B	C
Approach Delay (s)	0.2		14.6	15.8
Approach LOS			B	C

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	176	0	176	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	191	0	191	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	240			29			165	174	145	261	261	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240			29			165	174	145	261	261	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	67	100	99	100	100
cM capacity (veh/h)	1326			1584			804	574	908	504	634	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	240	191	5
Volume Left	0	0	0	5
Volume Right	17	191	0	0
cSH	1326	1584	574	504
Volume to Capacity	0.00	0.00	0.33	0.01
Queue Length 95th (ft)	0	0	36	1
Control Delay (s)	0.0	0.0	14.4	12.2
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	14.4	12.2
Approach LOS			B	B

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	10	220	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	11	239	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	253	240	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	253	240	240			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	735	799	1338			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	240
Volume Left	1	1	0
Volume Right	1	0	1
cSH	766	1338	1700
Volume to Capacity	0.00	0.00	0.14
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.7	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.7	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	507	6	16	3	5	5	0	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	39	452	5	5	583	7	18	3	6	6	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	583			456			1172	1124	454	1133	1130	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			456			1172	1124	454	1133	1130	586
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			87	98	99	96	100	90
cM capacity (veh/h)	949			1115			141	189	588	163	187	494

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	590	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	949	1700	1115	1700	174	406
Volume to Capacity	0.04	0.27	0.00	0.35	0.16	0.13
Queue Length 95th (ft)	3	0	0	0	14	11
Control Delay (s)	9.0	0.0	8.2	0.0	29.5	15.2
Lane LOS	A		A		D	C
Approach Delay (s)	0.7		0.1		29.5	15.2
Approach LOS					D	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	446	110	8	14	38	52	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	361	11	16	485	120	9	15	41	57	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	604			372			1013	1040	366	1029	986	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	604			372			1013	1040	366	1029	986	545
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			95	93	94	69	97	95
cM capacity (veh/h)	936			1144			186	212	653	184	240	541

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	621	65	92
Volume Left	18	16	9	57
Volume Right	11	120	41	29
cSH	936	1144	359	237
Volume to Capacity	0.02	0.01	0.18	0.39
Queue Length 95th (ft)	2	1	16	44
Control Delay (s)	0.6	0.4	17.2	29.5
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	17.2	29.5
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	288	2	4	0	339	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	324	2	4	0	381	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381			326			356	737	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			326			356	737	325	406	357	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	89	95	100	100	100
cM capacity (veh/h)	1151			596			591	340	716	481	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	381	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	381	33
cSH	1151	1700	596	1700	453
Volume to Capacity	0.01	0.19	0.01	0.22	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.2	0.0	11.1	0.0	14.4
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.1		14.4
Approach LOS					B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/12/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	39	0	2	0	0	0	31	50	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	0	2	0	0	0	36	59	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		112	94	0	170	93	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		112	94	0	170	93	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	95	100	95	100
cM capacity (veh/h)	1554			1620		809	767	1076	711	777	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	48	0	95	40
Volume Left	46	0	0	2
Volume Right	2	0	59	0
cSH	1554	1700	932	773
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	332	4	15	450	31	10	7	24	32	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1770			1844			1759	1538		1747	
Flt Permitted		0.98			0.99			0.79	1.00		0.80	
Satd. Flow (perm)		1744			1824			1429	1538		1446	
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)	12	357	4	16	484	33	11	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	373	0	0	531	0	0	19	3	0	44	0
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		24.1			24.1			4.3	4.3		4.3	
Effective Green, g (s)		24.6			24.6			4.8	4.8		4.8	
Actuated g/C Ratio		0.66			0.66			0.13	0.13		0.13	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1147			1200			183	197		186	
v/s Ratio Prot												
v/s Ratio Perm		0.21			c0.29			0.01	0.00		c0.03	
v/c Ratio		0.32			0.44			0.10	0.02		0.24	
Uniform Delay, d1		2.8			3.1			14.4	14.2		14.7	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.3	0.0		0.7	
Delay (s)		3.0			3.4			14.7	14.3		15.3	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.0			3.4			14.4			15.3	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	37.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	2	262	19	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	203	17	2	298	22	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			220		506	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					302	
vCu, unblocked vol			220		506	203
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		97	100
cM capacity (veh/h)			1355		655	808

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	2	298	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1355	1700	672
Volume to Capacity	0.12	0.01	0.00	0.18	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.6
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.6
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	1207	11	0	0	0	0	55	24	16	81	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3343						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3343						3240			3066	
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)	128	1298	12	0	0	0	0	59	26	17	87	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1438	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2622						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.43									c0.03	
v/c Ratio		0.55						0.19			0.33	
Uniform Delay, d1		2.9						28.8			29.3	
Progression Factor		1.00						1.00			0.59	
Incremental Delay, d2		0.8						0.3			0.6	
Delay (s)		3.7						29.1			17.8	
Level of Service		A						C			B	
Approach Delay (s)		3.7			0.0			29.1			17.8	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1180	64	0	0	0	0	80	121	77	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3335						1711			1621	
Flt Permitted		1.00						1.00			0.73	
Satd. Flow (perm)		3335						1711			1204	
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)	18	1388	75	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	1477	0	0	0	0	0	211	0	0	187	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		30.4						14.8			14.8	
Effective Green, g (s)		30.4						14.8			14.8	
Actuated g/C Ratio		0.57						0.28			0.28	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1906						476			335	
v/s Ratio Prot								0.12				
v/s Ratio Perm		0.44									c0.16	
v/c Ratio		0.77						0.44			0.56	
Uniform Delay, d1		8.8						15.8			16.4	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.0						0.7			2.0	
Delay (s)		10.7						16.5			18.4	
Level of Service		B						B			B	
Approach Delay (s)		10.7			0.0			16.5			18.4	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	53.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1167	18	0	0	0	0	25	24	25	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3351						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3351						1597			1355	
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)	23	1203	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1244	0	0	0	0	0	29	0	0	55	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		30.8						4.5			4.5	
Effective Green, g (s)		31.3						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2368						180			153	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.37									c0.04	
v/c Ratio		0.53						0.16			0.36	
Uniform Delay, d1		3.0						17.8			18.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.4			1.4	
Delay (s)		3.2						18.2			19.6	
Level of Service		A						B			B	
Approach Delay (s)		3.2			0.0			18.2			19.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	44.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
418: Simpson Avenue/N Park Street #1012 & Ontario Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	1191	19	0	0	0	0	31	36	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	48	1228	20	0	0	0	0	32	37	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1247			1358	1335	624	764	1344	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1247			1358	1335	624	764	1344	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	78	91	79	69	100
cM capacity (veh/h)	1607			554			79	147	426	220	148	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	662	634	69	92
Volume Left	48	0	0	45
Volume Right	0	20	37	0
cSH	1607	1700	226	177
Volume to Capacity	0.03	0.37	0.31	0.52
Queue Length 95th (ft)	2	0	31	65
Control Delay (s)	0.9	0.0	27.7	45.4
Lane LOS	A		D	E
Approach Delay (s)	0.4		27.7	45.4
Approach LOS			D	E

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	859	12	0	0	0	0	415	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3323						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	934	13	0	0	0	0	451	9	0	0	0
RTOR Reduction (vph)	54	2	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	54	945	0	0	0	0	0	458	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	19.0	19.0						11.1				
Effective Green, g (s)	20.0	20.0						12.1				
Actuated g/C Ratio	0.50	0.50						0.30				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	874	1657						1054				
v/s Ratio Prot		c0.28						c0.13				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.57						0.43				
Uniform Delay, d1	5.2	7.0						11.3				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.5						0.3				
Delay (s)	5.2	7.5						11.5				
Level of Service	A	A						B				
Approach Delay (s)		7.3			0.0			11.5			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1076	70	0	0	0	0	27	171	41	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1575	1504		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.75	
Satd. Flow (perm)		2893	1300					1575	1504		1393	
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)	18	1157	75	0	0	0	0	29	184	44	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	47	47	0	0	0
Lane Group Flow (vph)	0	1175	66	0	0	0	0	61	58	0	78	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.2	53.2					7.8	7.8		7.8	
Effective Green, g (s)		53.7	53.7					8.3	8.3		8.3	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2219	997					187	178		165	
v/s Ratio Prot		c0.41						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.53	0.07					0.33	0.33		0.47	
Uniform Delay, d1		3.2	2.0					28.3	28.3		28.8	
Progression Factor		0.31	0.29					1.00	1.00		1.00	
Incremental Delay, d2		0.8	0.1					1.0	1.1		2.1	
Delay (s)		1.8	0.7					29.3	29.4		30.9	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.7			0.0			29.3			30.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1047	24	0	0	0	0	12	86	7	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2882						1314			1462	
Flt Permitted		1.00						1.00			0.87	
Satd. Flow (perm)		2882						1314			1291	
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)	24	1102	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	56	0	0	0	0
Lane Group Flow (vph)	0	1150	0	0	0	0	0	48	0	0	18	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.8						7.2			7.2	
Effective Green, g (s)		54.8						7.2			7.2	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2256						135			133	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.40									0.01	
v/c Ratio		0.51						0.36			0.14	
Uniform Delay, d1		2.7						29.2			28.6	
Progression Factor		0.39						1.00			1.00	
Incremental Delay, d2		0.6						1.6			0.5	
Delay (s)		1.7						30.9			29.0	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			30.9			29.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	906	16	0	0	0	0	0	29	289	216	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2887							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2887							1289	1681	1405	
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)	0	954	17	0	0	0	0	0	31	304	227	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	178	9	0
Lane Group Flow (vph)	0	969	0	0	0	0	0	0	4	83	261	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		28.6							9.5	18.4	18.4	
Effective Green, g (s)		29.1							10.0	18.9	18.9	
Actuated g/C Ratio		0.42							0.14	0.27	0.27	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1200							184	454	379	
v/s Ratio Prot		c0.34							c0.00	0.05	c0.19	
v/s Ratio Perm												
v/c Ratio		0.81							0.02	0.18	0.69	
Uniform Delay, d1		18.0							25.8	19.6	22.9	
Progression Factor		1.09							1.00	1.00	1.00	
Incremental Delay, d2		5.5							0.2	0.9	9.8	
Delay (s)		25.1							26.0	20.5	32.7	
Level of Service		C							C	C	C	
Approach Delay (s)		25.1			0.0			26.0			26.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	25.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	383	12	0	0	0	0	45	25	460	47	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2879						1418		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2879						1418		1681	1360	
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)	7	407	13	0	0	0	0	48	27	489	50	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	424	0	0	0	0	0	51	0	269	270	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		17.6						6.9		32.0	32.0	
Effective Green, g (s)		18.1						7.4		32.5	32.5	
Actuated g/C Ratio		0.26						0.11		0.46	0.46	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		744						150		780	631	
v/s Ratio Prot								c0.04		0.16	c0.20	
v/s Ratio Perm		0.15										
v/c Ratio		0.57						0.34		0.34	0.43	
Uniform Delay, d1		22.6						29.0		12.0	12.5	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.0						1.3		1.2	2.1	
Delay (s)		23.6						30.4		13.2	14.7	
Level of Service		C						C		B	B	
Approach Delay (s)		23.6			0.0			30.4			13.9	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	309	0	517	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1791		2111		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1791		2111		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	343	0	574	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	343	0	574	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		29.3		29.3		
Effective Green, g (s)		29.3		29.3		
Actuated g/C Ratio		0.74		0.74		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1332		1570		
v/s Ratio Prot		0.19		c0.27		
v/s Ratio Perm						
v/c Ratio		0.26		0.37		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.1		
Delay (s)		1.7		1.9		
Level of Service		A		A		
Approach Delay (s)	1.7			1.9	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	39.4	Sum of lost time (s)	10.1
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	894	22	18	163	0	0	90	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3490			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3490			3041			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	931	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	78	0
Lane Group Flow (vph)	0	0	0	0	967	0	0	189	0	0	269	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					49.1			11.9			11.9	
Effective Green, g (s)					49.6			12.4			12.4	
Actuated g/C Ratio					0.71			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2473			539			531	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.28			0.06				
v/c Ratio					0.39			0.35			0.51	
Uniform Delay, d1					4.1			25.3			26.0	
Progression Factor					1.16			1.04			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					5.2			26.6			26.8	
Level of Service					A			C			C	
Approach Delay (s)		0.0			5.2			26.6			26.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1196	19	13	381	0	0	51	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
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3353			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3353			1679			1710	1615
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)	0	0	0	15	1272	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	50
Lane Group Flow (vph)	0	0	0	0	1305	0	0	419	0	0	54	240
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2060			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.39			c0.25				0.15
v/c Ratio					0.63			0.92			0.12	0.55
Uniform Delay, d1					8.5			24.8			19.2	21.8
Progression Factor					0.67			1.00			1.00	1.00
Incremental Delay, d2					1.4			26.1			0.5	4.9
Delay (s)					7.2			50.8			19.7	26.7
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.2			50.8			25.6	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	70.0	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)	0	0	0	44	1120	92	32	68	0	0	211	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3567	1554		1815			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3567	1554		1551			1794	
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)	0	0	0	46	1179	97	34	72	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1225	54	0	106	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					29.0	29.0		14.7			14.7	
Effective Green, g (s)					29.0	29.0		14.7			14.7	
Actuated g/C Ratio					0.56	0.56		0.28			0.28	
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)					2001	872		441			510	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.34	0.04		0.07				
v/c Ratio					0.61	0.06		0.24			0.59	
Uniform Delay, d1					7.6	5.2		14.2			15.9	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.3			1.7	
Delay (s)					8.2	5.2		14.5			17.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			7.9			14.5			17.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	51.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1280	5	18	7	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.96			1.00	
Satd. Flow (prot)					3324			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3324			1676			1777	
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)	0	0	0	35	1362	5	19	7	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1402	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.9			1.3			1.3	
Effective Green, g (s)					30.4			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2514			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.42			c0.02				
v/c Ratio					0.56			0.35			0.29	
Uniform Delay, d1					2.1			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			2.8			2.0	
Delay (s)					2.3			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.3			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	42	1171	12	52	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	46	1287	13	57	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1300			0			758	1392	0	1393	1386	650
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1300			0			758	1392	0	1393	1386	650
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			77	90	100	100	86	97
cM capacity (veh/h)	529			1622			251	137	1084	93	140	417

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	690	657	71	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	215	188
Volume to Capacity	0.03	0.39	0.33	0.17
Queue Length 95th (ft)	2	0	35	15
Control Delay (s)	0.8	0.0	29.8	28.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		29.8	28.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
471: Sumner Avenue/N Alder Street/Lincoln Street #1011 & 23rd Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1159	2	471	23	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3361		1618	1630				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1618	1630				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1302	2	529	26	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	158	158	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1304	0	117	122	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					26.4		10.0	10.0				0.6
Effective Green, g (s)					27.4		11.0	11.0				1.6
Actuated g/C Ratio					0.53		0.21	0.21				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1771		342	345				50
v/s Ratio Prot					c0.39							
v/s Ratio Perm							0.07	0.08				c0.00
v/c Ratio					0.74		0.34	0.35				0.00
Uniform Delay, d1					9.5		17.4	17.5				24.4
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.6		0.6	0.6				0.0
Delay (s)					11.1		18.0	18.1				24.5
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.1			18.1			24.5	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	52.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1222	184	0	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1286	194	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1286				1286	643
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1286				1286	643
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	78
cM capacity (veh/h)	535				153	411

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	643	643	194	89
Volume Left	0	0	0	0
Volume Right	0	0	194	89
cSH	1700	1700	1700	411
Volume to Capacity	0.38	0.38	0.11	0.22
Queue Length 95th (ft)	0	0	0	20
Control Delay (s)	0.0	0.0	0.0	16.2
Lane LOS				C
Approach Delay (s)	0.0			16.2
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	474	1066	0	0	8	98	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	489	1099	0	0	8	101	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			489	489	489	1588	1588	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			489	489	489	1588	1588	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	6	100	
cM capacity (veh/h)			480	579	490	108	413	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	855	733	8	101
Volume Left	0	0	8	0
Volume Right	366	733	0	0
cSH	1700	1700	490	108
Volume to Capacity	0.50	0.43	0.02	0.94
Queue Length 95th (ft)	0	0	1	144
Control Delay (s)	0.0	0.0	12.5	143.6
Lane LOS			B	F
Approach Delay (s)	0.0		133.7	
Approach LOS			F	

Intersection Summary			
Average Delay	8.6		
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	52	0	0	1186	0	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	0	0	1289	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	0	0	1289	0	508
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.3			46.7		69.0
Effective Green, g (s)	13.8			47.2		69.0
Actuated g/C Ratio	0.20			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	354			2398		2787
v/s Ratio Prot	0.03			c0.37		
v/s Ratio Perm						c0.18
v/c Ratio	0.16			0.54		0.18
Uniform Delay, d1	22.8			5.4		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.8		0.1
Delay (s)	22.9			6.3		0.1
Level of Service	C			A		A
Approach Delay (s)	22.9			6.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	609	577	467	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1694	1845	3467	
Flt Permitted			0.39	1.00	1.00	
Satd. Flow (perm)			695	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	634	601	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	634	601	518	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			49.8	54.3	25.2	
Effective Green, g (s)			50.8	54.8	25.7	
Actuated g/C Ratio			0.74	0.79	0.37	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			875	1465	1291	
v/s Ratio Prot			c0.26	0.33	0.15	
v/s Ratio Perm			c0.27			
v/c Ratio			0.72	0.41	0.40	
Uniform Delay, d1			4.3	2.2	16.0	
Progression Factor			0.45	0.08	1.00	
Incremental Delay, d2			2.2	0.7	0.1	
Delay (s)			4.2	0.9	16.1	
Level of Service			A	A	B	
Approach Delay (s)	0.0			2.6	16.1	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	947	218	0	0	0	21	0	532	257	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.95				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2364				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2364				
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)	1018	234	0	0	0	23	0	572	276	0	0	0
RTOR Reduction (vph)	359	91	0	0	0	23	0	57	0	0	0	0
Lane Group Flow (vph)	262	540	0	0	0	0	0	791	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	15%	41%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	24.2	24.2				2.4		31.4				
Effective Green, g (s)	24.7	24.7				1.4		31.9				
Actuated g/C Ratio	0.35	0.35				0.02		0.46				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	571	587				26		1077				
v/s Ratio Prot								c0.33				
v/s Ratio Perm	0.16	0.33				c0.00						
v/c Ratio	0.46	0.92				0.02		0.73				
Uniform Delay, d1	17.5	21.7				33.6		15.6				
Progression Factor	1.26	0.33				1.00		1.00				
Incremental Delay, d2	1.4	13.8				0.1		2.6				
Delay (s)	23.4	21.0				33.7		18.2				
Level of Service	C	C				C		B				
Approach Delay (s)		22.2			33.7			18.2			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	21	0	0	272	18	95	1413	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1386			4786				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1264			1386			4786				
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)	17	22	0	0	286	19	100	1487	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	301	0	0	1593	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	38%	5%	38%	6%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.7			20.7			40.3				
Effective Green, g (s)		21.2			21.2			40.8				
Actuated g/C Ratio		0.30			0.30			0.58				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		383			420			2790				
v/s Ratio Prot					c0.22							
v/s Ratio Perm		0.03						0.33				
v/c Ratio		0.10			0.72			0.57				
Uniform Delay, d1		17.6			21.7			9.1				
Progression Factor		0.71			1.00			0.87				
Incremental Delay, d2		0.1			5.7			0.6				
Delay (s)		12.6			27.5			8.5				
Level of Service		B			C			A				
Approach Delay (s)		12.6			27.5			8.5			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	64	1465	96	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1712	1504		4522				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4522				
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)	95	152	0	0	86	120	67	1542	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	24	0	9	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	72	0	1701	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	6%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.3			17.3	17.3		44.2				
Effective Green, g (s)		17.8			17.8	17.8		44.2				
Actuated g/C Ratio		0.25			0.25	0.25		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		316			435	382		2855				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.38				
v/c Ratio		0.78			0.22	0.19		0.60				
Uniform Delay, d1		24.3			20.6	20.4		7.6				
Progression Factor		0.96			1.00	1.00		1.94				
Incremental Delay, d2		11.3			0.3	0.2		0.8				
Delay (s)		34.6			20.9	20.7		15.6				
Level of Service		C			C	C		B				
Approach Delay (s)		34.6			20.8			15.6			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
307: S "K" Street & W Heron Street #1012

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	76	31	0	0	71	32	28	1461	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1785			4381				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4381				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	87	36	0	0	82	37	32	1679	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	19	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	100	0	0	1760	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.5			11.5			50.0				
Effective Green, g (s)		12.0			12.0			50.0				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		227			306			3129				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.09						0.40				
v/c Ratio		0.54			0.33			0.56				
Uniform Delay, d1		26.5			25.5			4.8				
Progression Factor		1.61			1.00			0.26				
Incremental Delay, d2		2.6			0.6			0.6				
Delay (s)		45.1			26.1			1.8				
Level of Service		D			C			A				
Approach Delay (s)		45.1			26.1			1.8			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	233	25	0	0	32	18	54	1635	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4390				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4390				
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)	248	27	0	0	34	19	57	1739	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	275	0	0	42	0	0	1816	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.4			20.4			39.6				
Effective Green, g (s)		20.9			20.9			41.1				
Actuated g/C Ratio		0.30			0.30			0.59				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		315			423			2578				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.41				
v/c Ratio		0.87			0.10			0.70				
Uniform Delay, d1		23.3			17.7			10.2				
Progression Factor		0.67			1.00			0.59				
Incremental Delay, d2		22.1			0.1			1.4				
Delay (s)		37.7			17.8			7.4				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.8			7.4			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1607	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.92			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1374			4395				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1374			4395				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	60	17	0	0	8	11	25	1826	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	9	0	0	1868	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		151			183			3309				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.43				
v/c Ratio		0.51			0.05			0.56				
Uniform Delay, d1		28.2			26.5			3.7				
Progression Factor		0.82			1.00			0.26				
Incremental Delay, d2		2.6			0.1			0.5				
Delay (s)		25.9			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		25.9			26.6			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	56	37	34	35	0	0	0	0	17	1314	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4426	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1185						4426	
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)	0	62	41	38	39	0	0	0	0	19	1460	40
RTOR Reduction (vph)	0	35	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	68	0	0	77	0	0	0	0	0	1517	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.5			8.5						53.0	
Effective Green, g (s)		9.0			9.0						53.0	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		181			152						3351	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.06						0.34	
v/c Ratio		0.38			0.51						0.45	
Uniform Delay, d1		27.9			28.4						3.1	
Progression Factor		1.00			0.94						0.69	
Incremental Delay, d2		1.3			2.6						0.4	
Delay (s)		29.2			29.4						2.6	
Level of Service		C			C						A	
Approach Delay (s)		29.2			29.4			0.0			2.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
311: Broadway Street & W Wishkah Street #1011

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	145	35	24	68	0	0	0	0	8	1173	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1451			1471						4404	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1451			1325						4404	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	158	38	26	74	0	0	0	0	9	1275	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	100	0	0	0	0	0	1361	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		13.9			13.9						46.1	
Effective Green, g (s)		14.4			14.4						47.6	
Actuated g/C Ratio		0.21			0.21						0.68	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		298			273						2995	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.08						0.31	
v/c Ratio		0.61			0.37						0.45	
Uniform Delay, d1		25.2			23.9						5.2	
Progression Factor		1.00			0.95						0.26	
Incremental Delay, d2		3.5			0.8						0.5	
Delay (s)		28.7			23.5						1.8	
Level of Service		C			C						A	
Approach Delay (s)		28.7			23.5			0.0			1.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
312: S "K" Street & W Wishkah Street #1011

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1188	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1448			1471						4429	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1448			1339						4429	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	82	22	17	49	0	0	0	0	21	1291	27
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	87	0	0	66	0	0	0	0	0	1337	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.4			8.4						53.1	
Effective Green, g (s)		8.9			8.9						53.1	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		184			170						3360	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.30	
v/c Ratio		0.47			0.39						0.40	
Uniform Delay, d1		28.4			28.1						2.9	
Progression Factor		1.00			0.55						0.24	
Incremental Delay, d2		1.9			1.4						0.3	
Delay (s)		30.3			16.9						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.3			16.9			0.0			1.0	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	104	15	57	84	0	0	0	0	131	1051	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						0.99	
Satd. Flow (prot)		1831			1826						4531	
Flt Permitted		1.00			0.85						0.99	
Satd. Flow (perm)		1831			1577						4531	
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)	0	109	16	60	88	0	0	0	0	138	1106	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	148	0	0	0	0	0	1273	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		536			462						2686	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.28	
v/c Ratio		0.22			0.32						0.47	
Uniform Delay, d1		18.7			19.3						8.1	
Progression Factor		1.00			0.98						0.86	
Incremental Delay, d2		0.9			1.7						0.6	
Delay (s)		19.6			20.6						7.5	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.6			0.0			7.5	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	142	213	0	0	0	0	21	349	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.92	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					1025						2476	1400
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					1025						2476	1400
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)	0	0	0	151	227	0	0	0	0	22	371	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	215	215
Lane Group Flow (vph)	0	0	0	0	378	0	0	0	0	0	585	192
Heavy Vehicles (%)	2%	2%	2%	88%	17%	2%	2%	2%	2%	0%	15%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					28.4						32.6	32.6
Effective Green, g (s)					28.9						33.1	33.1
Actuated g/C Ratio					0.41						0.47	0.47
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					423						1171	662
v/s Ratio Prot												
v/s Ratio Perm					0.37						0.24	0.14
v/c Ratio					0.89						0.50	0.29
Uniform Delay, d1					19.1						12.7	11.3
Progression Factor					0.99						0.21	0.19
Incremental Delay, d2					18.5						1.4	1.0
Delay (s)					37.4						4.0	3.1
Level of Service					D						A	A
Approach Delay (s)		0.0			37.4			0.0			3.7	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1109	72	0	0	0	0	0	0	19	452	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		0.99									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3000									2343	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3000									2343	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1275	83	0	0	0	0	0	0	22	520	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	1353	0	0	0	0	0	0	0	0	537	0
Heavy Vehicles (%)	0%	4%	58%	2%	2%	2%	2%	2%	2%	0%	32%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		37.6									23.4	
Effective Green, g (s)		38.1									23.9	
Actuated g/C Ratio		0.54									0.34	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1633									800	
v/s Ratio Prot		c0.45										
v/s Ratio Perm											0.23	
v/c Ratio		0.83									0.67	
Uniform Delay, d1		13.2									19.7	
Progression Factor		0.80									1.32	
Incremental Delay, d2		4.3									1.7	
Delay (s)		14.8									27.8	
Level of Service		B									C	
Approach Delay (s)		14.8			0.0			0.0			27.8	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1461	397	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1242			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1242			
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)	124	692	0	0	0	0	0	1538	418	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	804	0	0	0	0	0	1538	381	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	4%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		18.8						42.7	42.7			
Effective Green, g (s)		18.8						43.2	43.2			
Actuated g/C Ratio		0.27						0.62	0.62			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1229						1892	766			
v/s Ratio Prot								c0.50				
v/s Ratio Perm		0.18							0.31			
v/c Ratio		0.65						0.81	0.50			
Uniform Delay, d1		22.7						10.3	7.4			
Progression Factor		0.88						1.87	2.15			
Incremental Delay, d2		1.2						3.4	2.0			
Delay (s)		21.2						22.7	17.9			
Level of Service		C						C	B			
Approach Delay (s)		21.2			0.0			21.7			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	553	411	76	1407	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3254			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3254			2943				
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)	0	0	0	0	570	424	78	1451	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	976	0	0	1524	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					23.4			37.6				
Effective Green, g (s)					23.9			38.1				
Actuated g/C Ratio					0.34			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1111			1602				
v/s Ratio Prot					c0.30							
v/s Ratio Perm								0.52				
v/c Ratio					0.88			0.95				
Uniform Delay, d1					21.7			15.1				
Progression Factor					1.00			0.76				
Incremental Delay, d2					8.1			9.1				
Delay (s)					29.7			20.6				
Level of Service					C			C				
Approach Delay (s)		0.0			29.7			20.6			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1118	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2948									4361	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4361	
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)	0	290	45	0	0	0	0	0	0	394	1202	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	57	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1539	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.7									48.3	
Effective Green, g (s)		13.2									48.8	
Actuated g/C Ratio		0.19									0.70	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		556									3040	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.35	
v/c Ratio		0.56									0.51	
Uniform Delay, d1		25.8									5.0	
Progression Factor		1.00									0.65	
Incremental Delay, d2		1.3									0.5	
Delay (s)		27.1									3.8	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			3.8	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	324	296	0	0	0	0	0	1272	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.99						1.00	
Satd. Flow (prot)				1264	3277						4415	
Flt Permitted				0.95	0.99						1.00	
Satd. Flow (perm)				1264	3277						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	352	322	0	0	0	0	0	1383	68
RTOR Reduction (vph)	0	0	0	25	25	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	193	431	0	0	0	0	0	1445	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				16.8	16.8						44.2	
Effective Green, g (s)				17.3	17.3						44.7	
Actuated g/C Ratio				0.25	0.25						0.64	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				312	810						2819	
v/s Ratio Prot				c0.15	0.13						c0.33	
v/s Ratio Perm												
v/c Ratio				0.62	0.53						0.51	
Uniform Delay, d1				23.4	22.8						6.8	
Progression Factor				1.20	1.25						1.00	
Incremental Delay, d2				1.9	0.4						0.7	
Delay (s)				30.0	29.0						7.5	
Level of Service				C	C						A	
Approach Delay (s)		0.0			29.3			0.0			7.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
323: W Wishkah Street #121 #122 & S Chehalis Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1238	36	28	1027	2	349	8	18	17	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.98	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3311		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3125		1727	3311		1681	1672			1762	
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)	13	1456	42	33	1208	2	411	9	21	20	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1510	0	33	1210	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	9%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.3		5.4	80.7		17.3	17.3			5.0	
Effective Green, g (s)		72.3		5.4	81.7		18.3	18.3			6.0	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1915		79	2292		261	259			90	
v/s Ratio Prot				0.02	c0.37		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.53		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.8		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.56		1.00	1.00			1.00	
Incremental Delay, d2		3.4		2.8	0.7		22.4	19.9			1.7	
Delay (s)		20.5		59.5	5.6		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.5			7.0			69.6			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1575	102	53	1079	0	215	8	109	51	19	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3312		1727	3312		1665	1552			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3312		1727	3312		1665	1552			1751	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	26	1641	106	55	1124	0	224	8	114	53	20	25
RTOR Reduction (vph)	0	3	0	0	0	0	0	66	0	0	13	0
Lane Group Flow (vph)	26	1744	0	55	1124	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	9%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.3		7.6	66.3		14.5	14.5			11.6	
Effective Green, g (s)	6.6	66.3		7.6	67.3		15.5	15.5			12.6	
Actuated g/C Ratio	0.06	0.56		0.06	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1861		111	1889		219	204			187	
v/s Ratio Prot	0.02	c0.53		0.03	c0.34		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.27	0.94		0.50	0.60		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.9		53.3	16.5		49.9	47.6			49.5	
Progression Factor	0.78	0.60		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	8.6		2.5	1.4		21.0	2.2			2.1	
Delay (s)	42.3	22.9		55.9	17.9		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		23.2			19.6			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	913	3	516	853	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.93	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3260		3038	1517		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3260		3038	1517		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1127	4	637	1053	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1131	0	1153	537	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	13%	7%	7%	14%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	36.2		38.0	86.2		38.0
Effective Green, g (s)	38.2		40.0	86.2		40.0
Actuated g/C Ratio	0.44		0.46	1.00		0.46
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1445		1410	1517		1232
v/s Ratio Prot	c0.35		c0.38	0.35		0.14
v/s Ratio Perm						
v/c Ratio	0.78		0.82	0.35		0.31
Uniform Delay, d1	20.5		20.0	0.0		14.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	2.7		3.7	0.6		0.1
Delay (s)	23.2		23.7	0.6		14.5
Level of Service	C		C	A		B
Approach Delay (s)	23.2		16.4		14.5	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	86.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	20	0	0	8	19	635	1	3	340	55
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	21	0	0	8	20	668	1	3	358	58
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1117	1110	394	1096	1138	671	422			670		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1117	1110	394	1096	1138	671	422			670		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	178	205	655	182	197	459	1136			919		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	676	3	416
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	655	459	1136	1136	919	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.24
Queue Length 95th (ft)	2	1	1	1	0	0
Control Delay (s)	10.7	13.0	8.2	0.3	8.9	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.0	0.5		0.1	
Approach LOS	B	B				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	24	1	10	0	2	4	14	590	2	2	292	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	26	1	11	0	2	4	15	634	2	2	314	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1004	1001	330	995	1015	635	345			637		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1004	1001	330	995	1015	635	345			637		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	98	100	99	99	99			100		
cM capacity (veh/h)	216	240	714	218	236	480	1219			947		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	637	2	345
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	270	357	1219	1700	947	1700
Volume to Capacity	0.14	0.02	0.01	0.37	0.00	0.20
Queue Length 95th (ft)	12	1	1	0	0	0
Control Delay (s)	20.5	15.3	8.0	0.0	8.8	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	20.5	15.3	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	2	507	2	2	222	278
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	2	583	2	2	255	320
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1014	1009	415	852	1168	584	575			585		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1014	1009	415	852	1168	584	575			585		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	90	100	99	100	97	99	100			100		
cM capacity (veh/h)	211	241	642	267	185	495	1008			1000		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	585	2	575
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	320
cSH	232	257	1008	1700	1000	1700
Volume to Capacity	0.11	0.04	0.00	0.34	0.00	0.34
Queue Length 95th (ft)	9	3	0	0	0	0
Control Delay (s)	22.4	19.6	8.6	0.0	8.6	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	22.4	19.6	0.0		0.0	
Approach LOS	C	C				

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	43.3%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
336: Simpson Avenue/N Park Street & W State Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	484	30	0	0	0	1	82	1	2	227	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	509	32	0	0	0	1	86	1	2	239	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			541			659	525	525	569	541	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			541			659	525	525	569	541	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	81	100	99	47	99
cM capacity (veh/h)	1604			1038			216	459	554	369	448	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	541	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	454	463
Volume to Capacity	0.00	0.00	0.19	0.55
Queue Length 95th (ft)	0	0	18	82
Control Delay (s)	0.0	0.0	14.8	22.0
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	14.8	22.0
Approach LOS			B	C

Intersection Summary			
Average Delay	7.8		
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	573	8	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	599	1	3	616	9	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1222	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1222	599
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		95	99
cM capacity (veh/h)			948		159	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	619	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	181
Volume to Capacity	0.35	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	26.1
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	26.1
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	550	0	2	598	10	0	1	0	8	2	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	598	0	2	650	11	0	1	0	9	2	8
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			601			1288	1284	603	1279	1279	657
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			601			1288	1284	603	1279	1279	657
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	94	99	98
cM capacity (veh/h)	912			959			136	164	500	138	161	457

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	663	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	912	959	164	198
Volume to Capacity	0.01	0.00	0.01	0.09
Queue Length 95th (ft)	1	0	1	8
Control Delay (s)	0.3	0.1	27.1	25.1
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	27.1	25.1
Approach LOS			D	D

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
352: W Wishkah St & Williams Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	553	1	1	523	1	71	0	163	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	601	1	1	568	1	77	0	177	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	570			602			1176	1176	602	1352	1176	569
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570			602			1176	1176	602	1352	1176	569
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			54	100	65	99	100	100
cM capacity (veh/h)	988			961			169	191	504	82	191	522

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	603	571	254	2
Volume Left	1	1	77	1
Volume Right	1	1	177	1
cSH	988	961	315	142
Volume to Capacity	0.00	0.00	0.81	0.02
Queue Length 95th (ft)	0	0	167	1
Control Delay (s)	0.0	0.0	50.9	30.7
Lane LOS	A	A	F	D
Approach Delay (s)	0.0	0.0	50.9	30.7
Approach LOS			F	D

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	630	34	186	468	11	6	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	692	37	204	514	12	7	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			730			1777	1749	713	1749	1762	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			730			1777	1749	713	1749	1762	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			65			84	96	99	59	98	94
cM capacity (veh/h)	1021			577			42	53	434	45	52	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	780	731	11	54
Volume Left	51	204	7	19
Volume Right	37	12	2	34
cSH	1021	577	54	108
Volume to Capacity	0.05	0.35	0.20	0.50
Queue Length 95th (ft)	4	40	17	56
Control Delay (s)	1.3	9.5	88.1	67.3
Lane LOS	A	A	F	F
Approach Delay (s)	1.3	9.5	88.1	67.3
Approach LOS			F	F

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
354: W Wishkah Street & S Garfield St

8/12/2009

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	649	0	0	27	664
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	705	0	0	29	722
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			780	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			780	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			357	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	705	29	722
Volume Left	0	29	0
Volume Right	705	0	0
cSH	1700	1578	1700
Volume to Capacity	0.41	0.02	0.42
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
355: S Garfield St & W Heron Street

8/12/2009

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	662	5	0	192	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	727	5	0	211	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1458	1458	1460	0
vC1, stage 1 conf vol			1458	1458	0	
vC2, stage 2 conf vol			0	0	1460	
vCu, unblocked vol	0		1458	1458	1460	0
tC, single (s)	4.2		7.1	7.3	6.5	6.2
tC, 2 stage (s)			6.1	6.3	5.5	
tF (s)	2.3		3.5	4.8	4.0	3.3
p0 queue free %	54		100	0	100	100
cM capacity (veh/h)	1597		80	47	95	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	485	248	211
Volume Left	485	242	0
Volume Right	0	5	0
cSH	1597	1597	47
Volume to Capacity	0.46	0.46	4.46
Queue Length 95th (ft)	61	61	Err
Control Delay (s)	9.1	9.0	Err
Lane LOS	A	A	F
Approach Delay (s)	9.1		Err
Approach LOS			F

Intersection Summary			
Average Delay	2242.0		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	21	3	0	0	169	7	12	830	20	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	3	0	0	192	8	14	943	23	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	603	993	0	984	982	483	0			966		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	603	993	0	984	982	483	0			966		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	99	100	100	22	99	99			100		
cM capacity (veh/h)	136	245	1091	201	247	532	1600			709		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	485	494
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	144	253	1600	1700
Volume to Capacity	0.19	0.79	0.01	0.29
Queue Length 95th (ft)	17	149	1	0
Control Delay (s)	35.6	57.6	0.3	0.0
Lane LOS	E	F	A	
Approach Delay (s)	35.6	57.6	0.1	
Approach LOS	E	F		

Intersection Summary				
Average Delay		10.5		
Intersection Capacity Utilization		46.6%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	7	6	0	0	16	2	5	844	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	6	0	0	17	2	5	879	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	460	895	2	897	892	442	0			884		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460	895	2	897	892	442	0			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	94	100	100			100		
cM capacity (veh/h)	464	281	1086	233	282	569	1593			761		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	445	445
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	357	299	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.26
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	15.5	17.8	0.1	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.5	17.8	0.1	
Approach LOS	C	C		

Intersection Summary				
Average Delay		0.6		
Intersection Capacity Utilization		37.3%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	31	797	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	105	9	36	927	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	600	1013	4	1011	1009	471	3			938		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600	1013	4	1011	1009	471	3			938		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	94	97	100	100	49	98	98			100		
cM capacity (veh/h)	200	204	1019	162	205	492	1592			724		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	499	470
Volume Left	12	0	36	0
Volume Right	0	9	0	7
cSH	202	215	1592	1700
Volume to Capacity	0.09	0.53	0.02	0.28
Queue Length 95th (ft)	8	69	2	0
Control Delay (s)	24.7	39.2	0.7	0.0
Lane LOS	C	E	A	
Approach Delay (s)	24.7	39.2	0.4	
Approach LOS	C	E		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	34	0	0	0	0	3	509	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	4	100	40	0	0	0	0	4	606	10
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	641	628	311	328	633	7	618			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	363	348	0	13	353	7	338			7		
tC, single (s)	7.8	6.8	7.2	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.4	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	92	100	100			100		
cM capacity (veh/h)	446	483	931	852	501	1055	1087			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	140	307	312
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	535	709	1541	1700
Volume to Capacity	0.03	0.20	0.00	0.18
Queue Length 95th (ft)	3	18	0	0
Control Delay (s)	12.0	11.3	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	11.3	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.4		
Intersection Capacity Utilization		36.2%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
360: N Lincoln Street & W Wishkah Street

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	570	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	613	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	650	642	315	340	648	4	626			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	642	315	340	648	4	626			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	347	392	687	575	389	1080	952			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	317	319
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	418	481	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.9	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.9	13.0	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		35.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	525	65	0	30	1	121	41	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	559	69	0	32	1	129	44	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	628			0			643	621	316	326	655	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628			0			643	621	316	326	655	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	77	89	100
cM capacity (veh/h)	950			1565			329	403	686	565	383	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	293	348	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	408	504
Volume to Capacity	0.01	0.20	0.08	0.34
Queue Length 95th (ft)	1	0	7	38
Control Delay (s)	0.4	0.0	14.6	15.8
Lane LOS	A		B	C
Approach Delay (s)	0.2		14.6	15.8
Approach LOS			B	C

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	176	0	176	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	191	0	191	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	240			29			165	174	145	261	261	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240			29			165	174	145	261	261	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	67	100	99	100	100
cM capacity (veh/h)	1326			1584			804	574	908	504	634	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	240	191	5
Volume Left	0	0	0	5
Volume Right	17	191	0	0
cSH	1326	1584	574	504
Volume to Capacity	0.00	0.00	0.33	0.01
Queue Length 95th (ft)	0	0	36	1
Control Delay (s)	0.0	0.0	14.4	12.2
Lane LOS			B	B
Approach Delay (s)	0.0	0.0	14.4	12.2
Approach LOS			B	B

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	10	220	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	11	239	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	253	240	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	253	240	240			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	735	799	1338			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	240
Volume Left	1	1	0
Volume Right	1	0	1
cSH	766	1338	1700
Volume to Capacity	0.00	0.00	0.14
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.7	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.7	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	507	6	16	3	5	5	0	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	39	452	5	5	583	7	18	3	6	6	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	583			456			1172	1124	454	1133	1130	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			456			1172	1124	454	1133	1130	586
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			87	98	99	96	100	90
cM capacity (veh/h)	949			1115			141	189	588	163	187	494

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	590	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	949	1700	1115	1700	174	406
Volume to Capacity	0.04	0.27	0.00	0.35	0.16	0.13
Queue Length 95th (ft)	3	0	0	0	14	11
Control Delay (s)	9.0	0.0	8.2	0.0	29.5	15.2
Lane LOS	A		A		D	C
Approach Delay (s)	0.7		0.1		29.5	15.2
Approach LOS					D	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	446	110	8	14	38	52	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	361	11	16	485	120	9	15	41	57	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	604			372			1013	1040	366	1029	986	545
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	604			372			1013	1040	366	1029	986	545
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			95	93	94	69	97	95
cM capacity (veh/h)	936			1144			186	212	653	184	240	541

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	621	65	92
Volume Left	18	16	9	57
Volume Right	11	120	41	29
cSH	936	1144	359	237
Volume to Capacity	0.02	0.01	0.18	0.39
Queue Length 95th (ft)	2	1	16	44
Control Delay (s)	0.6	0.4	17.2	29.5
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	17.2	29.5
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	288	2	4	0	339	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	324	2	4	0	381	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	381			326			356	737	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381			326			356	737	325	406	357	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	89	95	100	100	100
cM capacity (veh/h)	1151			596			591	340	716	481	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	381	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	381	33
cSH	1151	1700	596	1700	453
Volume to Capacity	0.01	0.19	0.01	0.22	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.2	0.0	11.1	0.0	14.4
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.1		14.4
Approach LOS					B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/12/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	39	0	2	0	0	0	31	50	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	46	0	2	0	0	0	36	59	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		112	94	0	170	93	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		112	94	0	170	93	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	95	100	95	100
cM capacity (veh/h)	1554			1620		809	767	1076	711	777	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	48	0	95	40
Volume Left	46	0	0	2
Volume Right	2	0	59	0
cSH	1554	1700	932	773
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	382	4	15	500	31	10	7	24	32	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1666			1767			1759	1538		1747	
Flt Permitted		0.98			0.99			0.81	1.00		0.80	
Satd. Flow (perm)		1643			1747			1461	1538		1446	
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)	12	411	4	16	538	33	11	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	22	0	12	0
Lane Group Flow (vph)	0	427	0	0	586	0	0	19	4	0	44	0
Heavy Vehicles (%)	7%	14%	7%	2%	7%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		26.2			26.2			5.7	5.7		5.7	
Effective Green, g (s)		26.7			26.7			6.2	6.2		6.2	
Actuated g/C Ratio		0.65			0.65			0.15	0.15		0.15	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1073			1140			221	233		219	
v/s Ratio Prot												
v/s Ratio Perm		0.26			c0.34			0.01	0.00		c0.03	
v/c Ratio		0.40			0.51			0.09	0.02		0.20	
Uniform Delay, d1		3.3			3.7			14.9	14.8		15.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.4			0.2	0.0		0.5	
Delay (s)		3.6			4.1			15.1	14.8		15.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.6			4.1			14.9			15.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	40.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	52	262	19	53
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	203	17	59	298	22	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			220		619	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					416	
vCu, unblocked vol			220		619	203
tC, single (s)			5.0		6.5	7.1
tC, 2 stage (s)					5.5	
tF (s)			3.0		3.6	4.1
p0 queue free %			94		96	91
cM capacity (veh/h)			955		560	656

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	59	298	82
Volume Left	0	0	59	0	22
Volume Right	0	17	0	0	60
cSH	1700	1700	955	1700	627
Volume to Capacity	0.12	0.01	0.06	0.18	0.13
Queue Length 95th (ft)	0	0	5	0	11
Control Delay (s)	0.0	0.0	9.0	0.0	11.6
Lane LOS			A		B
Approach Delay (s)	0.0		1.5		11.6
Approach LOS					B

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	1257	11	0	0	0	0	55	24	16	81	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3285						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3285						3240			3066	
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)	128	1352	12	0	0	0	0	59	26	17	87	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1492	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2576						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.45									c0.03	
v/c Ratio		0.58						0.19			0.33	
Uniform Delay, d1		3.0						28.8			29.3	
Progression Factor		1.00						1.00			0.57	
Incremental Delay, d2		1.0						0.3			0.6	
Delay (s)		3.9						29.1			17.4	
Level of Service		A						C			B	
Approach Delay (s)		3.9			0.0			29.1			17.4	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1230	64	0	0	0	0	80	121	77	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3275						1711			1621	
Flt Permitted		1.00						1.00			0.69	
Satd. Flow (perm)		3275						1711			1149	
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)	18	1447	75	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1536	0	0	0	0	0	214	0	0	187	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		33.8						15.1			15.1	
Effective Green, g (s)		33.8						15.1			15.1	
Actuated g/C Ratio		0.59						0.27			0.27	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1945						454			305	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.47									c0.16	
v/c Ratio		0.79						0.47			0.61	
Uniform Delay, d1		8.8						17.5			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.1						0.8			3.6	
Delay (s)		11.0						18.3			22.0	
Level of Service		B						B			C	
Approach Delay (s)		11.0			0.0			18.3			22.0	
Approach LOS		B			A			B			C	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1217	18	0	0	0	0	25	24	25	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3289						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3289						1597			1355	
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)	23	1255	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	0	1296	0	0	0	0	0	29	0	0	55	0
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		32.0						4.5			4.5	
Effective Green, g (s)		32.5						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2349						175			149	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.39									c0.04	
v/c Ratio		0.55						0.16			0.37	
Uniform Delay, d1		3.1						18.4			18.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.3						0.4			1.5	
Delay (s)		3.3						18.8			20.3	
Level of Service		A						B			C	
Approach Delay (s)		3.3			0.0			18.8			20.3	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	45.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
418: Simpson Avenue/N Park Street #1012 & Ontario Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	1241	19	0	0	0	0	31	36	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	48	1279	20	0	0	0	0	32	37	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1299			1409	1386	649	790	1396	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1299			1409	1386	649	790	1396	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	77	91	78	66	100
cM capacity (veh/h)	1607			529			71	136	410	207	138	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	688	659	69	92
Volume Left	48	0	0	45
Volume Right	0	20	37	0
cSH	1607	1700	213	165
Volume to Capacity	0.03	0.39	0.32	0.55
Queue Length 95th (ft)	2	0	34	71
Control Delay (s)	0.8	0.0	29.9	50.9
Lane LOS	A		D	F
Approach Delay (s)	0.4		29.9	50.9
Approach LOS			D	F

Intersection Summary				
Average Delay		4.9		
Intersection Capacity Utilization		54.4%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	909	12	0	0	0	0	415	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3230						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3230						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	988	13	0	0	0	0	451	9	0	0	0
RTOR Reduction (vph)	52	1	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	56	1000	0	0	0	0	0	458	0	0	0	0
Heavy Vehicles (%)	3%	6%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	20.6	20.6						11.4				
Effective Green, g (s)	21.6	21.6						12.4				
Actuated g/C Ratio	0.51	0.51						0.30				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	901	1661						1032				
v/s Ratio Prot		c0.31						c0.13				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.60						0.44				
Uniform Delay, d1	5.1	7.2						12.0				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.6						0.3				
Delay (s)	5.1	7.8						12.3				
Level of Service	A	A						B				
Approach Delay (s)		7.5			0.0			12.3			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1126	70	0	0	0	0	27	171	41	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2840	1300					1575	1504		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.75	
Satd. Flow (perm)		2840	1300					1575	1504		1395	
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)	18	1211	75	0	0	0	0	29	184	44	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	40	40	0	0	0
Lane Group Flow (vph)	0	1229	66	0	0	0	0	68	65	0	78	0
Heavy Vehicles (%)	6%	8%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.1	53.1					7.9	7.9		7.9	
Effective Green, g (s)		53.6	53.6					8.4	8.4		8.4	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2175	995					189	180		167	
v/s Ratio Prot		c0.43						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.57	0.07					0.36	0.36		0.47	
Uniform Delay, d1		3.4	2.0					28.3	28.3		28.7	
Progression Factor		0.31	0.34					1.00	1.00		1.00	
Incremental Delay, d2		1.0	0.1					1.2	1.2		2.1	
Delay (s)		2.0	0.8					29.5	29.5		30.8	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.9			0.0			29.5			30.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1097	24	0	0	0	0	12	86	7	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2832						1314			1462	
Flt Permitted		1.00						1.00			0.87	
Satd. Flow (perm)		2832						1314			1297	
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)	24	1155	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	48	0	0	0	0
Lane Group Flow (vph)	0	1203	0	0	0	0	0	56	0	0	18	0
Heavy Vehicles (%)	6%	8%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.5						7.5			7.5	
Effective Green, g (s)		54.5						7.5			7.5	
Actuated g/C Ratio		0.78						0.11			0.11	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2205						141			139	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.42									0.01	
v/c Ratio		0.55						0.40			0.13	
Uniform Delay, d1		3.0						29.1			28.3	
Progression Factor		0.36						1.00			1.00	
Incremental Delay, d2		0.6						1.8			0.4	
Delay (s)		1.7						31.0			28.7	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			31.0			28.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	956	16	0	0	0	0	0	29	289	216	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2809							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2809							1289	1681	1405	
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)	0	1006	17	0	0	0	0	0	31	304	227	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	175	10	0
Lane Group Flow (vph)	0	1021	0	0	0	0	0	0	4	86	260	0
Heavy Vehicles (%)	2%	9%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		29.1							9.5	17.9	17.9	
Effective Green, g (s)		29.6							10.0	18.4	18.4	
Actuated g/C Ratio		0.42							0.14	0.26	0.26	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1188							184	442	369	
v/s Ratio Prot		c0.36							c0.00	0.05	c0.19	
v/s Ratio Perm												
v/c Ratio		0.86							0.02	0.20	0.71	
Uniform Delay, d1		18.3							25.8	20.0	23.3	
Progression Factor		1.10							1.00	1.00	1.00	
Incremental Delay, d2		7.5							0.2	1.0	10.8	
Delay (s)		27.6							26.0	21.0	34.2	
Level of Service		C							C	C	C	
Approach Delay (s)		27.6			0.0			26.0			27.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	433	12	0	0	0	0	45	25	460	47	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2733						1418		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2733						1418		1681	1360	
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)	7	461	13	0	0	0	0	48	27	489	50	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	479	0	0	0	0	0	51	0	269	270	0
Heavy Vehicles (%)	6%	12%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		19.9						6.9		29.7	29.7	
Effective Green, g (s)		20.4						7.4		30.2	30.2	
Actuated g/C Ratio		0.29						0.11		0.43	0.43	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		796						150		725	587	
v/s Ratio Prot								c0.04		0.16	c0.20	
v/s Ratio Perm		0.18										
v/c Ratio		0.60						0.34		0.37	0.46	
Uniform Delay, d1		21.3						29.0		13.5	14.1	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.3						1.3		1.5	2.6	
Delay (s)		22.6						30.4		14.9	16.7	
Level of Service		C						C		B	B	
Approach Delay (s)		22.6			0.0			30.4			15.8	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	359	0	567	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1678		2031		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1678		2031		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	399	0	630	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	399	0	630	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	11%	2%	6%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		30.5		30.5		
Effective Green, g (s)		30.5		30.5		
Actuated g/C Ratio		0.75		0.75		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1264		1530		
v/s Ratio Prot		0.24		c0.31		
v/s Ratio Perm						
v/c Ratio		0.32		0.41		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.2		
Delay (s)		1.8		2.0		
Level of Service		A		A		
Approach Delay (s)	1.8			2.0	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	40.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	944	22	18	163	0	0	90	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3395			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3395			3044			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	983	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	68	0
Lane Group Flow (vph)	0	0	0	0	1019	0	0	189	0	0	279	0
Heavy Vehicles (%)	2%	2%	2%	3%	6%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					48.8			12.2			12.2	
Effective Green, g (s)					49.3			12.7			12.7	
Actuated g/C Ratio					0.70			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2391			552			543	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.30			0.06				
v/c Ratio					0.43			0.34			0.51	
Uniform Delay, d1					4.4			25.0			25.9	
Progression Factor					1.13			1.03			1.00	
Incremental Delay, d2					0.5			0.3			0.8	
Delay (s)					5.4			26.2			26.7	
Level of Service					A			C			C	
Approach Delay (s)		0.0			5.4			26.2			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1246	19	13	381	0	0	51	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
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3290			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3290			1679			1710	1615
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)	0	0	0	15	1326	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	44
Lane Group Flow (vph)	0	0	0	0	1359	0	0	419	0	0	54	246
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2021			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.41			c0.25				0.15
v/c Ratio					0.67			0.92			0.12	0.56
Uniform Delay, d1					8.9			24.8			19.2	21.9
Progression Factor					0.69			1.00			1.00	1.00
Incremental Delay, d2					1.7			26.1			0.5	5.1
Delay (s)					7.9			50.8			19.7	27.0
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.9			50.8			25.9	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1170	92	32	68	0	0	211	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3500	1554		1815			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3500	1554		1550			1794	
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)	0	0	0	46	1232	97	34	72	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1278	55	0	106	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	3%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					30.6	30.6		15.0			15.0	
Effective Green, g (s)					30.6	30.6		15.0			15.0	
Actuated g/C Ratio					0.57	0.57		0.28			0.28	
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)					1998	887		434			502	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.37	0.04		0.07				
v/c Ratio					0.64	0.06		0.24			0.60	
Uniform Delay, d1					7.8	5.1		14.9			16.7	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.7	0.0		0.3			1.9	
Delay (s)					8.5	5.1		15.2			18.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.2			15.2			18.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1330	5	18	7	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.96			1.00	
Satd. Flow (prot)					3262			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3262			1676			1777	
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)	0	0	0	35	1415	5	19	7	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1455	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	5%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.9			1.3			1.3	
Effective Green, g (s)					30.4			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2467			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.45			c0.02				
v/c Ratio					0.59			0.35			0.29	
Uniform Delay, d1					2.2			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.4			2.8			2.0	
Delay (s)					2.5			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.5			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	42	1221	12	52	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	46	1342	13	57	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1355			0			785	1447	0	1448	1441	677
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1355			0			785	1447	0	1448	1441	677
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			76	89	100	100	85	97
cM capacity (veh/h)	504			1622			237	127	1084	84	130	400

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	717	684	71	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	202	175
Volume to Capacity	0.03	0.40	0.35	0.18
Queue Length 95th (ft)	2	0	38	16
Control Delay (s)	0.8	0.0	32.3	30.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		32.3	30.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1209	2	471	23	0	0	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3297		1618	1630				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3297		1618	1630				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1358	2	529	26	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	156	156	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1360	0	119	124	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.3		10.1	10.1				0.7
Effective Green, g (s)					29.3		11.1	11.1				1.7
Actuated g/C Ratio					0.54		0.21	0.21				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1786		332	334				51
v/s Ratio Prot					c0.41							
v/s Ratio Perm							0.07	0.08				c0.00
v/c Ratio					0.76		0.36	0.37				0.00
Uniform Delay, d1					9.7		18.4	18.5				25.4
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					2.0		0.7	0.7				0.0
Delay (s)					11.6		19.1	19.2				25.4
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.6			19.2			25.4	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1272	184	0	85
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1339	194	0	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1339				1339	669
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1339				1339	669
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	77
cM capacity (veh/h)	511				142	395

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	669	669	194	89
Volume Left	0	0	0	0
Volume Right	0	0	194	89
cSH	1700	1700	1700	395
Volume to Capacity	0.39	0.39	0.11	0.23
Queue Length 95th (ft)	0	0	0	21
Control Delay (s)	0.0	0.0	0.0	16.8
Lane LOS				C
Approach Delay (s)	0.0			16.8
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
479: Sumner Avenue/N Alder Street/Lincoln Street #1011 & 6th Street

8/12/2009

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	474	1116	0	0	8	98	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	489	1151	0	0	8	101	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			489	489	489	1639	1639	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			489	489	489	1639	1639	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	0	100	
cM capacity (veh/h)			480	579	490	100	395	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	872	767	8	101
Volume Left	0	0	8	0
Volume Right	384	767	0	0
cSH	1700	1700	490	100
Volume to Capacity	0.51	0.45	0.02	1.01
Queue Length 95th (ft)	0	0	1	155
Control Delay (s)	0.0	0.0	12.5	170.1
Lane LOS			B	F
Approach Delay (s)	0.0		158.2	
Approach LOS			F	

Intersection Summary			
Average Delay	9.9		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	52	0	0	1236	0	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3438		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3438		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	0	0	1343	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	0	0	1343	0	508
Heavy Vehicles (%)	2%	2%	3%	5%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.4			48.1		70.5
Effective Green, g (s)	13.9			48.6		70.5
Actuated g/C Ratio	0.20			0.69		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	349			2370		2787
v/s Ratio Prot	0.03			c0.39		
v/s Ratio Perm						c0.18
v/c Ratio	0.16			0.57		0.18
Uniform Delay, d1	23.5			5.6		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	23.6			6.5		0.1
Level of Service	C			A		A
Approach Delay (s)	23.6			6.5	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	4.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	659	577	467	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1631	1845	3467	
Flt Permitted			0.38	1.00	1.00	
Satd. Flow (perm)			658	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	686	601	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	686	601	518	0
Heavy Vehicles (%)	2%	2%	7%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			51.2	55.7	25.0	
Effective Green, g (s)			52.2	56.2	25.5	
Actuated g/C Ratio			0.74	0.80	0.36	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			856	1471	1254	
v/s Ratio Prot			c0.30	0.33	0.15	
v/s Ratio Perm			c0.29			
v/c Ratio			0.80	0.41	0.41	
Uniform Delay, d1			5.5	2.2	16.9	
Progression Factor			0.63	0.08	1.00	
Incremental Delay, d2			4.5	0.7	0.1	
Delay (s)			7.9	0.8	17.0	
Level of Service			A	A	B	
Approach Delay (s)	0.0			4.6	17.0	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	18.3
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	966	222	0	0	0	22	0	566	152	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.97				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2704				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2704				
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)	1039	239	0	0	0	24	0	609	163	0	0	0
RTOR Reduction (vph)	344	88	0	0	0	23	0	25	0	0	0	0
Lane Group Flow (vph)	290	556	0	0	0	1	0	747	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	8%	17%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	25.7	25.7				2.5		29.8				
Effective Green, g (s)	26.2	26.2				1.5		30.3				
Actuated g/C Ratio	0.37	0.37				0.02		0.43				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	606	622				27		1170				
v/s Ratio Prot								c0.28				
v/s Ratio Perm	0.18	0.33				c0.00						
v/c Ratio	0.48	0.89				0.02		0.64				
Uniform Delay, d1	16.7	20.6				33.5		15.6				
Progression Factor	1.33	0.37				1.00		1.00				
Incremental Delay, d2	1.7	12.4				0.1		1.2				
Delay (s)	23.9	20.0				33.6		16.7				
Level of Service	C	C				C		B				
Approach Delay (s)		21.9			33.6			16.7			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	22	0	0	169	18	53	1508	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1644			4933				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1271			1644			4933				
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)	17	23	0	0	178	19	56	1587	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	40	0	0	191	0	0	1649	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	15%	5%	3%	5%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		13.6			13.6			47.4				
Effective Green, g (s)		14.1			14.1			47.9				
Actuated g/C Ratio		0.20			0.20			0.68				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		256			331			3376				
v/s Ratio Prot					c0.12							
v/s Ratio Perm		0.03						0.33				
v/c Ratio		0.16			0.58			0.49				
Uniform Delay, d1		23.0			25.3			5.2				
Progression Factor		1.06			1.00			0.91				
Incremental Delay, d2		0.3			2.4			0.4				
Delay (s)		24.7			27.7			5.1				
Level of Service		C			C			A				
Approach Delay (s)		24.7			27.7			5.1			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	92	147	0	0	91	116	72	1548	105	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.97	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1722	1504		4522				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1236			1722	1504		4522				
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)	97	155	0	0	96	122	76	1629	111	0	0	0
RTOR Reduction (vph)	0	0	0	0	12	19	0	9	0	0	0	0
Lane Group Flow (vph)	0	252	0	0	105	82	0	1807	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	6%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.5			17.5	17.5		44.0				
Effective Green, g (s)		18.0			18.0	18.0		44.0				
Actuated g/C Ratio		0.26			0.26	0.26		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		318			443	387		2842				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.40				
v/c Ratio		0.79			0.24	0.21		0.64				
Uniform Delay, d1		24.3			20.6	20.4		8.0				
Progression Factor		0.95			1.00	1.00		2.12				
Incremental Delay, d2		12.0			0.3	0.3		1.0				
Delay (s)		35.0			20.8	20.7		18.1				
Level of Service		C			C	C		B				
Approach Delay (s)		35.0			20.8			18.1			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
307: S "K" Street & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	78	31	0	0	73	32	28	1543	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1786			4382				
Flt Permitted		0.70			1.00			1.00				
Satd. Flow (perm)		1310			1786			4382				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	90	36	0	0	84	37	32	1774	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	126	0	0	106	0	0	1855	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.7			11.7			49.8				
Effective Green, g (s)		12.2			12.2			49.8				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		228			311			3117				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.10						0.42				
v/c Ratio		0.55			0.34			0.60				
Uniform Delay, d1		26.4			25.4			5.1				
Progression Factor		1.61			1.00			0.25				
Incremental Delay, d2		2.8			0.7			0.7				
Delay (s)		45.3			26.0			1.9				
Level of Service		D			C			A				
Approach Delay (s)		45.3			26.0			1.9			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	238	26	0	0	32	18	62	1714	22	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4391				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1057			1418			4391				
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)	253	28	0	0	34	19	66	1823	23	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	281	0	0	44	0	0	1910	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.7			20.7			39.3				
Effective Green, g (s)		21.2			21.2			40.8				
Actuated g/C Ratio		0.30			0.30			0.58				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		320			429			2559				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.27						0.44				
v/c Ratio		0.88			0.10			0.75				
Uniform Delay, d1		23.2			17.6			10.8				
Progression Factor		0.68			1.00			0.62				
Incremental Delay, d2		22.3			0.1			1.7				
Delay (s)		38.0			17.7			8.4				
Level of Service		D			B			A				
Approach Delay (s)		38.0			17.7			8.4			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	54	15	0	0	8	10	23	1685	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.93			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1380			4395				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1132			1380			4395				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	61	17	0	0	9	11	26	1915	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	78	0	0	10	0	0	1958	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		150			183			3309				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.45				
v/c Ratio		0.52			0.06			0.59				
Uniform Delay, d1		28.3			26.5			3.9				
Progression Factor		0.82			1.00			0.25				
Incremental Delay, d2		3.1			0.1			0.5				
Delay (s)		26.3			26.7			1.5				
Level of Service		C			C			A				
Approach Delay (s)		26.3			26.7			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	57	38	35	36	0	0	0	0	17	1391	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4426	
Flt Permitted		1.00			0.79						1.00	
Satd. Flow (perm)		1410			1184						4426	
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)	0	63	42	39	40	0	0	0	0	19	1546	41
RTOR Reduction (vph)	0	28	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	77	0	0	79	0	0	0	0	0	1604	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.9	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		183			154						3345	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.07						0.36	
v/c Ratio		0.42			0.51						0.48	
Uniform Delay, d1		28.0			28.4						3.3	
Progression Factor		1.00			0.96						0.68	
Incremental Delay, d2		1.6			2.8						0.5	
Delay (s)		29.6			30.1						2.7	
Level of Service		C			C						A	
Approach Delay (s)		29.6			30.1			0.0			2.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	148	44	25	76	0	0	0	0	9	1247	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1444			1472						4405	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1444			1329						4405	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	161	48	27	83	0	0	0	0	10	1355	86
RTOR Reduction (vph)	0	18	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	191	0	0	110	0	0	0	0	0	1444	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		14.4			14.4						45.6	
Effective Green, g (s)		14.9			14.9						47.1	
Actuated g/C Ratio		0.21			0.21						0.67	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		307			283						2964	
v/s Ratio Prot		c0.13										
v/s Ratio Perm					0.08						0.33	
v/c Ratio		0.62			0.39						0.49	
Uniform Delay, d1		25.0			23.6						5.6	
Progression Factor		1.00			0.94						0.27	
Incremental Delay, d2		3.9			0.8						0.5	
Delay (s)		28.9			23.0						2.0	
Level of Service		C			C						A	
Approach Delay (s)		28.9			23.0			0.0			2.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	77	21	16	45	0	0	0	0	19	1270	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1447			1471						4430	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1447			1340						4430	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	84	23	17	49	0	0	0	0	21	1380	28
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	90	0	0	66	0	0	0	0	0	1427	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.9	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		188			174						3348	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.32	
v/c Ratio		0.48			0.38						0.43	
Uniform Delay, d1		28.2			27.9						3.1	
Progression Factor		1.00			0.51						0.23	
Incremental Delay, d2		1.9			1.3						0.4	
Delay (s)		30.1			15.7						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.1			15.7			0.0			1.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	106	23	66	93	0	0	0	0	133	1131	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.98						0.99	
Satd. Flow (prot)		1822			1825						4570	
Flt Permitted		1.00			0.83						0.99	
Satd. Flow (perm)		1822			1553						4570	
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)	0	112	24	69	98	0	0	0	0	140	1191	33
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	125	0	0	167	0	0	0	0	0	1360	0
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		534			455						2709	
v/s Ratio Prot		0.07										
v/s Ratio Perm					c0.11						0.30	
v/c Ratio		0.23			0.37						0.50	
Uniform Delay, d1		18.8			19.6						8.3	
Progression Factor		1.00			0.97						0.83	
Incremental Delay, d2		1.0			2.1						0.6	
Delay (s)		19.8			21.2						7.5	
Level of Service		B			C						A	
Approach Delay (s)		19.8			21.2			0.0			7.5	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	36	173	0	0	0	0	22	430	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.93	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1347						2531	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1347						2531	1400
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)	0	0	0	38	184	0	0	0	0	23	457	830
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	144	152
Lane Group Flow (vph)	0	0	0	0	222	0	0	0	0	0	751	263
Heavy Vehicles (%)	2%	2%	2%	50%	4%	2%	2%	2%	2%	0%	11%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					17.1						43.9	43.9
Effective Green, g (s)					17.6						44.4	44.4
Actuated g/C Ratio					0.25						0.63	0.63
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					339						1605	888
v/s Ratio Prot												
v/s Ratio Perm					0.16						0.30	0.19
v/c Ratio					0.65						0.47	0.30
Uniform Delay, d1					23.5						6.7	5.8
Progression Factor					0.83						0.52	0.19
Incremental Delay, d2					4.3						0.9	0.8
Delay (s)					23.9						4.3	1.9
Level of Service					C						A	A
Approach Delay (s)		0.0			23.9			0.0			3.6	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1131	31	0	0	0	0	0	0	19	425	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3109									2655	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3109									2655	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1300	36	0	0	0	0	0	0	22	489	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	1334	0	0	0	0	0	0	0	0	505	0
Heavy Vehicles (%)	0%	4%	7%	2%	2%	2%	2%	2%	2%	0%	16%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		39.1									21.9	
Effective Green, g (s)		39.6									22.4	
Actuated g/C Ratio		0.57									0.32	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1759									850	
v/s Ratio Prot		c0.43										
v/s Ratio Perm											0.19	
v/c Ratio		0.76									0.59	
Uniform Delay, d1		11.6									20.0	
Progression Factor		0.78									1.43	
Incremental Delay, d2		2.7									1.0	
Delay (s)		11.7									29.6	
Level of Service		B									C	
Approach Delay (s)		11.7			0.0			0.0			29.6	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	120	670	0	0	0	0	0	1522	419	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1242			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1242			
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)	126	705	0	0	0	0	0	1602	441	0	0	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	36	0	0	0
Lane Group Flow (vph)	0	821	0	0	0	0	0	1602	405	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	4%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		19.4						42.1	42.1			
Effective Green, g (s)		19.4						42.6	42.6			
Actuated g/C Ratio		0.28						0.61	0.61			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1268						1865	756			
v/s Ratio Prot								c0.52				
v/s Ratio Perm		0.18							0.33			
v/c Ratio		0.65						0.86	0.54			
Uniform Delay, d1		22.3						11.2	8.0			
Progression Factor		0.89						1.81	2.02			
Incremental Delay, d2		1.1						4.6	2.3			
Delay (s)		20.8						25.0	18.4			
Level of Service		C						C	B			
Approach Delay (s)		20.8			0.0			23.6			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	579	419	81	1464	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3258			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3258			2943				
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)	0	0	0	0	597	432	84	1509	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1013	0	0	1587	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					23.7			37.3				
Effective Green, g (s)					24.2			37.8				
Actuated g/C Ratio					0.35			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1126			1589				
v/s Ratio Prot					c0.31							
v/s Ratio Perm								0.54				
v/c Ratio					0.90			1.00				
Uniform Delay, d1					21.7			16.1				
Progression Factor					1.00			0.79				
Incremental Delay, d2					9.7			16.2				
Delay (s)					31.5			29.0				
Level of Service					C			C				
Approach Delay (s)		0.0			31.5			29.0			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	275	46	0	0	0	0	0	0	373	1188	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2944									4394	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2944									4394	
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)	0	296	49	0	0	0	0	0	0	401	1277	0
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	0	0	55	0
Lane Group Flow (vph)	0	322	0	0	0	0	0	0	0	0	1623	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.9									48.1	
Effective Green, g (s)		13.4									48.6	
Actuated g/C Ratio		0.19									0.69	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		564									3051	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.37	
v/c Ratio		0.57									0.53	
Uniform Delay, d1		25.7									5.2	
Progression Factor		1.00									0.63	
Incremental Delay, d2		1.4									0.6	
Delay (s)		27.1									3.9	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			3.9	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	345	305	0	0	0	0	0	1330	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.98						1.00	
Satd. Flow (prot)				1264	3275						4415	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1264	3275						4415	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	375	332	0	0	0	0	0	1446	70
RTOR Reduction (vph)	0	0	0	21	21	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	208	457	0	0	0	0	0	1510	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				17.5	17.5						43.5	
Effective Green, g (s)				18.0	18.0						44.0	
Actuated g/C Ratio				0.26	0.26						0.63	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				325	842						2775	
v/s Ratio Prot				c0.16	0.14						c0.34	
v/s Ratio Perm												
v/c Ratio				0.64	0.54						0.54	
Uniform Delay, d1				23.1	22.4						7.3	
Progression Factor				1.15	1.21						1.00	
Incremental Delay, d2				2.0	0.3						0.8	
Delay (s)				28.6	27.5						8.1	
Level of Service				C	C						A	
Approach Delay (s)		0.0			27.9			0.0			8.1	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
323: W Wishkah Street #121 #122 & S Chehalis Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1289	37	28	1076	2	356	9	18	17	4	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.96	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (prot)		3329		1727	3342		1681	1673			1743	
Flt Permitted		0.93		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3088		1727	3342		1681	1673			1743	
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)	18	1516	44	33	1266	2	419	11	21	20	5	11
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	10	0
Lane Group Flow (vph)	0	1577	0	33	1268	0	226	222	0	0	26	0
Heavy Vehicles (%)	2%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	1%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.1		5.4	80.5		17.4	17.4			5.1	
Effective Green, g (s)		72.1		5.4	81.5		18.4	18.4			6.1	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1887		79	2308		262	261			90	
v/s Ratio Prot				0.02	c0.38		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.51										
v/c Ratio		0.84		0.42	0.55		0.86	0.85			0.28	
Uniform Delay, d1		18.2		54.8	9.1		48.6	48.4			53.8	
Progression Factor		1.00		1.03	0.58		1.00	1.00			1.00	
Incremental Delay, d2		4.6		2.8	0.7		24.1	21.8			1.7	
Delay (s)		22.8		59.1	6.1		72.7	70.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		22.8			7.4			71.5			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	1632	104	54	1129	0	220	9	111	52	19	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3313		1727	3343		1665	1553			1750	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3313		1727	3343		1665	1553			1750	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	27	1700	108	56	1176	0	229	9	116	54	20	26
RTOR Reduction (vph)	0	3	0	0	0	0	0	64	0	0	12	0
Lane Group Flow (vph)	27	1805	0	56	1176	0	183	107	0	0	88	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.0		7.7	66.1		14.6	14.6			11.7	
Effective Green, g (s)	6.6	66.0		7.7	67.1		15.6	15.6			12.7	
Actuated g/C Ratio	0.06	0.56		0.07	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1853		113	1901		220	205			188	
v/s Ratio Prot	0.02	c0.54		0.03	c0.35		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.28	0.97		0.50	0.62		0.83	0.52			0.47	
Uniform Delay, d1	53.4	25.2		53.3	16.9		49.9	47.7			49.5	
Progression Factor	0.80	0.63		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	12.8		2.5	1.5		23.2	2.7			2.1	
Delay (s)	43.5	28.7		55.8	18.5		73.1	50.4			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		28.9			20.2			62.1			51.6	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM Average Control Delay	29.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	823	3	533	760	0	319
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.94	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3442		3145	1616		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3442		3145	1616		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1016	4	658	938	0	394
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1020	0	1089	507	0	394
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	29.8		33.1	74.9		33.1
Effective Green, g (s)	31.8		35.1	74.9		35.1
Actuated g/C Ratio	0.42		0.47	1.00		0.47
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1461		1474	1616		1245
v/s Ratio Prot	c0.30		c0.35	0.31		0.15
v/s Ratio Perm						
v/c Ratio	0.70		0.74	0.31		0.32
Uniform Delay, d1	17.6		16.2	0.0		12.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	1.4		1.9	0.5		0.1
Delay (s)	19.0		18.0	0.5		12.5
Level of Service	B		B	A		B
Approach Delay (s)	19.0		12.5		12.5	
Approach LOS	B		B		B	

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	74.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	21	0	0	9	19	647	1	3	346	56
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	22	0	0	9	20	681	1	3	364	59
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1138	1129	401	1116	1158	684	429			683		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1138	1129	401	1116	1158	684	429			683		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	172	200	649	176	192	452	1129			909		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	22	9	13	689	3	423
Volume Left	0	0	13	7	3	0
Volume Right	22	9	0	1	0	59
cSH	649	452	1129	1129	909	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.25
Queue Length 95th (ft)	3	2	1	1	0	0
Control Delay (s)	10.7	13.1	8.2	0.3	9.0	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.1	0.5		0.1	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	39.0%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
332: S M Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	25	1	10	0	2	4	14	602	2	2	298	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	27	1	11	0	2	4	15	647	2	2	320	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1023	1020	336	1015	1034	648	352			649		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1023	1020	336	1015	1034	648	352			649		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	100	98	100	99	99	99			100		
cM capacity (veh/h)	209	234	708	211	230	472	1213			937		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	39	6	15	649	2	352
Volume Left	27	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	261	349	1213	1700	937	1700
Volume to Capacity	0.15	0.02	0.01	0.38	0.00	0.21
Queue Length 95th (ft)	13	1	1	0	0	0
Control Delay (s)	21.2	15.5	8.0	0.0	8.9	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	21.2	15.5	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	10	400	2	2	226	168
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	11	460	2	2	260	193
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	851	846	356	752	941	461	453			462		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	851	846	356	752	941	461	453			462		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	92	100	100	100	98	99	99			100		
cM capacity (veh/h)	273	298	692	311	251	582	1118			1110		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	11	462	2	453
Volume Left	22	0	11	0	2	0
Volume Right	3	5	0	2	0	193
cSH	297	336	1118	1700	1110	1700
Volume to Capacity	0.09	0.03	0.01	0.27	0.00	0.27
Queue Length 95th (ft)	7	2	1	0	0	0
Control Delay (s)	18.2	16.1	8.3	0.0	8.3	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	18.2	16.1	0.2		0.0	
Approach LOS	C	C				

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	36.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	378	37	0	0	0	1	91	1	2	232	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	398	39	0	0	0	1	96	1	2	244	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			437			554	417	417	466	437	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			437			554	417	417	466	437	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	82	100	100	52	99
cM capacity (veh/h)	1604			1134			275	528	638	435	513	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	437	0	98	261
Volume Left	0	0	1	2
Volume Right	39	0	1	15
cSH	1604	1700	524	528
Volume to Capacity	0.00	0.00	0.19	0.49
Queue Length 95th (ft)	0	0	17	68
Control Delay (s)	0.0	0.0	13.4	18.3
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.4	18.3
Approach LOS			B	C

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	613	1	3	626	9	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	659	1	3	673	10	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			660		1339	660
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			660		1339	660
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		93	99
cM capacity (veh/h)			900		133	389

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	660	676	12
Volume Left	0	3	10
Volume Right	1	0	2
cSH	1700	900	151
Volume to Capacity	0.39	0.00	0.08
Queue Length 95th (ft)	0	0	6
Control Delay (s)	0.0	0.1	30.8
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	30.8
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	606	0	2	652	10	0	1	0	9	2	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	659	0	2	709	11	0	1	0	10	2	9
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	721			662			1411	1406	664	1400	1401	716
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	721			662			1411	1406	664	1400	1401	716
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	91	98	98
cM capacity (veh/h)	867			910			111	138	462	113	135	423

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	668	722	1	21
Volume Left	10	2	0	10
Volume Right	0	11	0	9
cSH	867	910	138	167
Volume to Capacity	0.01	0.00	0.01	0.12
Queue Length 95th (ft)	1	0	1	10
Control Delay (s)	0.3	0.1	31.3	29.5
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	31.3	29.5
Approach LOS			D	D

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
352: W Wishkah St & Williams Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	564	46	106	534	1	114	0	264	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	613	50	115	580	1	124	0	287	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	582			663			1453	1452	638	1739	1477	581
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	582			663			1453	1452	638	1739	1477	581
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			88			0	100	40	96	100	100
cM capacity (veh/h)	978			935			99	114	480	25	110	514

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	664	697	411	2
Volume Left	1	115	124	1
Volume Right	50	1	287	1
cSH	978	935	222	47
Volume to Capacity	0.00	0.12	1.85	0.05
Queue Length 95th (ft)	0	10	724	4
Control Delay (s)	0.0	3.0	437.0	84.5
Lane LOS	A	A	F	F
Approach Delay (s)	0.0	3.0	437.0	84.5
Approach LOS			F	F

Intersection Summary			
Average Delay	102.5		
Intersection Capacity Utilization	101.3%	ICU Level of Service	G
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	740	35	13	582	11	6	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	52	813	38	14	640	12	7	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	654			852			1646	1618	834	1617	1631	649
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	654			852			1646	1618	834	1617	1631	649
tC, single (s)	4.1			4.4			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.5			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			98			90	98	99	75	99	93
cM capacity (veh/h)	917			680			69	96	370	76	94	468

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	903	666	11	54
Volume Left	52	14	7	19
Volume Right	38	12	2	34
cSH	917	680	89	163
Volume to Capacity	0.06	0.02	0.12	0.33
Queue Length 95th (ft)	4	2	10	34
Control Delay (s)	1.5	0.6	51.2	37.6
Lane LOS	A	A	F	E
Approach Delay (s)	1.5	0.6	51.2	37.6
Approach LOS			F	E

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
354: W Wishkah Street & S Garfield St

8/19/2009

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	760	0	0	27	606
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	826	0	0	29	659
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			717	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			717	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			389	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	826	29	659
Volume Left	0	29	0
Volume Right	826	0	0
cSH	1700	1578	1700
Volume to Capacity	0.49	0.02	0.39
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	773	5	0	19	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	849	5	0	21	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1702	1702	1704	0
vC1, stage 1 conf vol			1702	1702	0	
vC2, stage 2 conf vol			0	0	1704	
vCu, unblocked vol	0		1702	1702	1704	0
tC, single (s)	4.1		7.1	6.7	6.5	6.2
tC, 2 stage (s)			6.1	5.7	5.5	
tF (s)	2.2		3.5	4.1	4.0	3.3
p0 queue free %	47		100	48	100	100
cM capacity (veh/h)	1604		50	40	62	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	566	289	21
Volume Left	566	283	0
Volume Right	0	5	0
cSH	1604	1604	40
Volume to Capacity	0.53	0.53	0.52
Queue Length 95th (ft)	82	82	46
Control Delay (s)	9.7	9.7	168.3
Lane LOS	A	A	F
Approach Delay (s)	9.7		168.3
Approach LOS			F

Intersection Summary			
Average Delay	13.5		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	22	3	0	0	172	8	12	768	21	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	25	3	0	0	195	9	14	873	24	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	570	924	0	914	912	448	0			897		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570	924	0	914	912	448	0			897		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	99	100	100	28	98	99			100		
cM capacity (veh/h)	166	269	1091	226	272	561	1600			753		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	28	205	450	460
Volume Left	25	0	14	0
Volume Right	0	9	0	24
cSH	174	278	1600	1700
Volume to Capacity	0.16	0.74	0.01	0.27
Queue Length 95th (ft)	14	132	1	0
Control Delay (s)	29.7	46.9	0.3	0.0
Lane LOS	D	E	A	
Approach Delay (s)	29.7	46.9	0.1	
Approach LOS	D	E		

Intersection Summary				
Average Delay		9.2		
Intersection Capacity Utilization		45.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
357: N Lincoln Street & W Heron Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	8	6	0	0	16	2	5	782	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	8	6	0	0	17	2	5	815	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	428	830	2	833	828	410	0			820		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	428	830	2	833	828	410	0			820		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	95	100	100			100		
cM capacity (veh/h)	491	307	1086	260	308	597	1593			805		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	15	19	412	412
Volume Left	8	0	5	0
Volume Right	0	2	0	5
cSH	391	325	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.24
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	14.6	16.7	0.1	0.0
Lane LOS	B	C	A	
Approach Delay (s)	14.6	16.7	0.1	
Approach LOS	B	C		

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		36.4%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	92	9	38	727	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	107	10	44	845	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	578	948	4	946	944	430	3			856		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	578	948	4	946	944	430	3			856		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	95	97	100	100	52	98	97			100		
cM capacity (veh/h)	217	223	1019	181	224	524	1599			777		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	117	467	430
Volume Left	12	0	44	0
Volume Right	0	10	0	7
cSH	219	236	1599	1700
Volume to Capacity	0.09	0.50	0.03	0.25
Queue Length 95th (ft)	7	63	2	0
Control Delay (s)	23.0	34.5	0.9	0.0
Lane LOS	C	D	A	
Approach Delay (s)	23.0	34.5	0.5	
Approach LOS	C	D		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		39.1%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	11	86	42	0	0	0	0	3	441	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	13	102	50	0	0	0	0	4	525	11
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.90	0.90	0.90	0.90	0.90		0.90					
vC, conflicting volume	566	548	271	297	553	7	539			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	280	260	0	0	266	7	250			7		
tC, single (s)	7.8	6.8	7.0	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.3	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	99	88	91	100	100			100		
cM capacity (veh/h)	510	544	963	864	564	1055	1172			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	27	152	266	273
Volume Left	0	102	4	0
Volume Right	13	0	0	11
cSH	687	735	1541	1700
Volume to Capacity	0.04	0.21	0.00	0.16
Queue Length 95th (ft)	3	19	0	0
Control Delay (s)	10.5	11.2	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	10.5	11.2	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.8		
Intersection Capacity Utilization		34.9%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
360: N Lincoln Street & W Wishkah Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	510	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	548	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked												
vC, conflicting volume	585	577	283	307	584	4	561			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	585	577	283	307	584	4	561			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	386	427	720	607	423	1080	1006			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	285	287
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	453	516	1576	1700
Volume to Capacity	0.03	0.06	0.01	0.17
Queue Length 95th (ft)	3	4	1	0
Control Delay (s)	13.2	12.4	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.2	12.4	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.1		
Intersection Capacity Utilization		33.4%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	464	66	0	30	1	123	42	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	494	70	0	32	1	131	45	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	564			0			579	556	284	293	591	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	564			0			579	556	284	293	591	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	93	100	78	89	100
cM capacity (veh/h)	1004			1565			367	438	719	598	416	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	261	317	33	176
Volume Left	14	0	0	131
Volume Right	0	70	1	0
cSH	1565	1700	444	538
Volume to Capacity	0.01	0.19	0.07	0.33
Queue Length 95th (ft)	1	0	6	35
Control Delay (s)	0.5	0.0	13.8	14.9
Lane LOS	A		B	B
Approach Delay (s)	0.2		13.8	14.9
Approach LOS			B	B

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	3	0	3	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	3	0	3	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	52			29			71	80	51	73	73	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	52			29			71	80	51	73	73	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	100	100	99	100	100
cM capacity (veh/h)	1554			1584			925	656	1023	900	806	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	52	3	5
Volume Left	0	0	0	5
Volume Right	17	3	0	0
cSH	1554	1584	656	900
Volume to Capacity	0.00	0.00	0.00	0.01
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	10.5	9.0
Lane LOS			B	A
Approach Delay (s)	0.0	0.0	10.5	9.0
Approach LOS			B	A

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	14.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	10	47	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	11	51	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	65	52	52			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	65	52	52			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	940	1016	1567			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	52
Volume Left	1	1	0
Volume Right	1	0	1
cSH	977	1567	1700
Volume to Capacity	0.00	0.00	0.03
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.7	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
371: Port Industrial Road & W 1st Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	35	445	4	4	559	6	16	3	5	5	0	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	40	511	5	5	643	7	18	3	6	6	0	49
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	643			516			1295	1246	514	1255	1252	646
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	643			516			1295	1246	514	1255	1252	646
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			84	98	99	96	100	89
cM capacity (veh/h)	901			1060			114	159	543	133	157	456

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	40	516	5	649	28	55
Volume Left	40	0	5	0	18	6
Volume Right	0	5	0	7	6	49
cSH	901	1700	1060	1700	143	364
Volume to Capacity	0.04	0.30	0.00	0.38	0.19	0.15
Queue Length 95th (ft)	4	0	0	0	17	13
Control Delay (s)	9.2	0.0	8.4	0.0	36.1	16.6
Lane LOS	A		A		E	C
Approach Delay (s)	0.7		0.1		36.1	16.6
Approach LOS					E	C

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
372: Port Industrial Road & Myrtle Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	377	10	15	490	119	9	14	39	61	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	410	11	16	533	129	10	15	42	66	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			421			1115	1147	415	1132	1088	597
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			421			1115	1147	415	1132	1088	597
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			99			94	92	93	57	97	94
cM capacity (veh/h)	890			1097			157	182	612	154	209	505

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	439	678	67	102
Volume Left	18	16	10	66
Volume Right	11	129	42	29
cSH	890	1097	314	196
Volume to Capacity	0.02	0.01	0.21	0.52
Queue Length 95th (ft)	2	1	20	67
Control Delay (s)	0.6	0.4	19.6	41.8
Lane LOS	A	A	C	E
Approach Delay (s)	0.6	0.4	19.6	41.8
Approach LOS			C	E

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	331	2	4	0	381	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	372	2	4	0	428	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	428			374			404	833	373	454	406	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	428			374			404	833	373	454	406	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	88	95	100	100	100
cM capacity (veh/h)	1105			560			549	299	673	440	525	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	374	4	428	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	428	33
cSH	1105	1700	560	1700	406
Volume to Capacity	0.01	0.22	0.01	0.25	0.17
Queue Length 95th (ft)	1	0	1	0	15
Control Delay (s)	8.3	0.0	11.5	0.0	15.6
Lane LOS	A		B		C
Approach Delay (s)	0.2		0.1		15.6
Approach LOS					C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/19/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	40	0	2	0	0	0	31	51	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	47	0	2	0	0	0	36	60	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		114	96	0	174	95	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		114	96	0	174	95	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	94	100	95	100
cM capacity (veh/h)	1554			1620		805	764	1076	706	774	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	49	0	96	40
Volume Left	47	0	0	2
Volume Right	2	0	60	0
cSH	1554	1700	932	770
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	351	4	15	469	31	10	8	25	32	8	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1771			1845			1761	1538		1749	
Flt Permitted		0.98			0.99			0.81	1.00		0.81	
Satd. Flow (perm)		1744			1824			1472	1538		1451	
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)	12	377	4	16	504	33	11	9	27	34	9	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	393	0	0	551	0	0	20	4	0	45	0
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		24.1			24.1			5.6	5.6		5.6	
Effective Green, g (s)		24.6			24.6			6.1	6.1		6.1	
Actuated g/C Ratio		0.64			0.64			0.16	0.16		0.16	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1109			1159			232	242		229	
v/s Ratio Prot												
v/s Ratio Perm		0.23			c0.30			0.01	0.00		c0.03	
v/c Ratio		0.35			0.48			0.09	0.02		0.20	
Uniform Delay, d1		3.3			3.7			13.9	13.8		14.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.2	0.0		0.4	
Delay (s)		3.5			4.0			14.1	13.8		14.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.5			4.0			13.9			14.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	38.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	195	15	2	278	19	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	222	17	2	316	22	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			239		542	222
vC1, stage 1 conf vol					222	
vC2, stage 2 conf vol					320	
vCu, unblocked vol			239		542	222
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		97	100
cM capacity (veh/h)			1334		638	789

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	222	17	2	316	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1334	1700	655
Volume to Capacity	0.13	0.01	0.00	0.19	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.7
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.7
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	24.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	121	1239	11	0	0	0	0	56	25	16	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3343						3237			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3343						3237			3066	
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)	130	1332	12	0	0	0	0	60	27	17	88	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	1474	0	0	0	0	0	63	0	0	105	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2622						328			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.44									c0.03	
v/c Ratio		0.56						0.19			0.34	
Uniform Delay, d1		2.9						28.8			29.3	
Progression Factor		1.00						1.00			0.58	
Incremental Delay, d2		0.9						0.3			0.6	
Delay (s)		3.8						29.1			17.5	
Level of Service		A						C			B	
Approach Delay (s)		3.8			0.0			29.1			17.5	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1204	65	0	0	0	0	81	123	79	83	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3335						1711			1621	
Flt Permitted		1.00						1.00			0.71	
Satd. Flow (perm)		3335						1711			1173	
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)	18	1416	76	0	0	0	0	95	145	93	98	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1506	0	0	0	0	0	217	0	0	191	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.8						15.3			15.3	
Effective Green, g (s)		31.8						15.3			15.3	
Actuated g/C Ratio		0.58						0.28			0.28	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1925						475			326	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.45									c0.16	
v/c Ratio		0.78						0.46			0.59	
Uniform Delay, d1		9.0						16.5			17.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.1						0.7			2.7	
Delay (s)		11.0						17.2			19.8	
Level of Service		B						B			B	
Approach Delay (s)		11.0			0.0			17.2			19.8	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1191	18	0	0	0	0	26	25	26	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3352						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3352						1597			1348	
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)	24	1228	19	0	0	0	0	27	26	27	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1270	0	0	0	0	0	30	0	0	56	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		31.0						4.5			4.5	
Effective Green, g (s)		31.5						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2373						179			151	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.38									c0.04	
v/c Ratio		0.54						0.17			0.37	
Uniform Delay, d1		3.1						17.9			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.4			1.5	
Delay (s)		3.3						18.3			19.8	
Level of Service		A						B			B	
Approach Delay (s)		3.3			0.0			18.3			19.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	44.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
418: Simpson Avenue/N Park Street #1012 & Ontario Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	48	1214	19	0	0	0	0	31	37	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	49	1252	20	0	0	0	0	32	38	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1271			1384	1360	636	779	1370	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1271			1384	1360	636	779	1370	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	77	91	79	68	100
cM capacity (veh/h)	1607			542			75	141	418	212	143	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	675	645	70	92
Volume Left	49	0	0	45
Volume Right	0	20	38	0
cSH	1607	1700	221	171
Volume to Capacity	0.03	0.38	0.32	0.54
Queue Length 95th (ft)	2	0	33	68
Control Delay (s)	0.9	0.0	28.7	48.3
Lane LOS	A		D	E
Approach Delay (s)	0.4		28.7	48.3
Approach LOS			D	E

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	876	12	0	0	0	0	458	9	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3323						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	952	13	0	0	0	0	498	10	0	0	0
RTOR Reduction (vph)	55	2	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	55	964	0	0	0	0	0	506	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	20.0	20.0						12.0				
Effective Green, g (s)	21.0	21.0						13.0				
Actuated g/C Ratio	0.50	0.50						0.31				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	876	1662						1081				
v/s Ratio Prot		c0.29						c0.14				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.58						0.47				
Uniform Delay, d1	5.4	7.4						11.7				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.5						0.3				
Delay (s)	5.5	7.9						12.0				
Level of Service	A	A						B				
Approach Delay (s)		7.6			0.0			12.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1133	71	0	0	0	0	27	174	42	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1575	1504		1811	
Flt Permitted		1.00	1.00					1.00	1.00		0.74	
Satd. Flow (perm)		2893	1300					1575	1504		1383	
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)	18	1218	76	0	0	0	0	29	187	45	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	40	40	0	0	0
Lane Group Flow (vph)	0	1236	67	0	0	0	0	69	67	0	79	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.1	53.1					7.9	7.9		7.9	
Effective Green, g (s)		53.6	53.6					8.4	8.4		8.4	
Actuated g/C Ratio		0.77	0.77					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2215	995					189	180		166	
v/s Ratio Prot		c0.43						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.56	0.07					0.37	0.37		0.48	
Uniform Delay, d1		3.4	2.0					28.4	28.4		28.7	
Progression Factor		0.28	0.28					1.00	1.00		1.00	
Incremental Delay, d2		0.9	0.1					1.2	1.3		2.1	
Delay (s)		1.8	0.7					29.6	29.7		30.9	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.8			0.0			29.6			30.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	24	1103	25	0	0	0	0	12	88	8	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2883						1314			1459	
Flt Permitted		1.00						1.00			0.86	
Satd. Flow (perm)		2883						1314			1282	
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)	25	1161	26	0	0	0	0	13	93	8	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	47	0	0	0	0
Lane Group Flow (vph)	0	1211	0	0	0	0	0	59	0	0	19	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.3						7.7			7.7	
Effective Green, g (s)		54.3						7.7			7.7	
Actuated g/C Ratio		0.78						0.11			0.11	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2236						145			141	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.42									0.01	
v/c Ratio		0.54						0.41			0.13	
Uniform Delay, d1		3.0						29.0			28.1	
Progression Factor		0.37						1.00			1.00	
Incremental Delay, d2		0.6						1.9			0.4	
Delay (s)		1.7						30.9			28.6	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			30.9			28.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	947	16	0	0	0	0	0	37	299	227	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2888							1289	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2888							1289	1681	1405	
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)	0	997	17	0	0	0	0	0	39	315	239	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	33	164	10	0
Lane Group Flow (vph)	0	1012	0	0	0	0	0	0	6	107	273	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		28.9							9.5	18.1	18.1	
Effective Green, g (s)		29.4							10.0	18.6	18.6	
Actuated g/C Ratio		0.42							0.14	0.27	0.27	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1213							184	447	373	
v/s Ratio Prot		c0.35							c0.00	0.06	c0.19	
v/s Ratio Perm												
v/c Ratio		0.83							0.03	0.24	0.73	
Uniform Delay, d1		18.1							25.8	20.1	23.4	
Progression Factor		1.11							1.00	1.00	1.00	
Incremental Delay, d2		6.3							0.3	1.3	12.0	
Delay (s)		26.4							26.1	21.4	35.5	
Level of Service		C							C	C	D	
Approach Delay (s)		26.4			0.0			26.1			28.6	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	8	403	12	0	0	0	0	45	26	480	48	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2879						1416		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2879						1416		1681	1360	
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)	9	429	13	0	0	0	0	48	28	511	51	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	448	0	0	0	0	0	51	0	281	281	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		18.4						6.8		31.3	31.3	
Effective Green, g (s)		18.9						7.3		31.8	31.8	
Actuated g/C Ratio		0.27						0.10		0.45	0.45	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		777						148		764	618	
v/s Ratio Prot								c0.04		0.17	c0.21	
v/s Ratio Perm		0.16										
v/c Ratio		0.58						0.34		0.37	0.45	
Uniform Delay, d1		22.1						29.1		12.5	13.1	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.0						1.4		1.4	2.4	
Delay (s)		23.1						30.5		13.9	15.5	
Level of Service		C						C		B	B	
Approach Delay (s)		23.1			0.0			30.5			14.7	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	327	0	538	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1791		2111		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1791		2111		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	363	0	598	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	363	0	598	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		29.6		29.6		
Effective Green, g (s)		29.6		29.6		
Actuated g/C Ratio		0.75		0.75		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1335		1574		
v/s Ratio Prot		0.20		c0.28		
v/s Ratio Perm						
v/c Ratio		0.27		0.38		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.2		
Delay (s)		1.7		1.9		
Level of Service		A		A		
Approach Delay (s)	1.7			1.9	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	39.7	Sum of lost time (s)	10.1
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
450: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Market Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	919	23	18	167	0	0	92	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					3490			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3490			3044			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	957	24	19	174	0	0	96	258
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	73	0
Lane Group Flow (vph)	0	0	0	0	994	0	0	193	0	0	281	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					48.8			12.2			12.2	
Effective Green, g (s)					49.3			12.7			12.7	
Actuated g/C Ratio					0.70			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2458			552			543	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.28			0.06				
v/c Ratio					0.40			0.35			0.52	
Uniform Delay, d1					4.3			25.0			25.9	
Progression Factor					1.37			1.04			1.00	
Incremental Delay, d2					0.5			0.4			0.8	
Delay (s)					6.3			26.3			26.7	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.3			26.3			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1227	19	13	389	0	0	52	278
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	4.0
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3353			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3353			1679			1710	1615
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)	0	0	0	15	1305	20	14	414	0	0	55	296
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	47
Lane Group Flow (vph)	0	0	0	0	1338	0	0	428	0	0	55	249
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2060			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.40			c0.25				0.15
v/c Ratio					0.65			0.94			0.12	0.57
Uniform Delay, d1					8.7			24.9			19.2	22.0
Progression Factor					0.62			1.00			1.00	1.00
Incremental Delay, d2					1.5			29.3			0.5	5.3
Delay (s)					6.9			54.2			19.7	27.3
Level of Service					A			D			B	C
Approach Delay (s)		0.0			6.9			54.2			26.1	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1142	94	32	69	0	0	215	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3567	1554		1815			1795	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3567	1554		1552			1795	
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)	0	0	0	46	1202	99	34	73	0	0	226	102
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1248	56	0	107	0	0	304	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					29.5	29.5		15.0			15.0	
Effective Green, g (s)					29.5	29.5		15.0			15.0	
Actuated g/C Ratio					0.56	0.56		0.29			0.29	
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)					2004	873		443			513	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.35	0.04		0.07				
v/c Ratio					0.62	0.06		0.24			0.59	
Uniform Delay, d1					7.8	5.2		14.4			16.1	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.3			1.8	
Delay (s)					8.4	5.3		14.7			18.0	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.1			14.7			18.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	52.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.9%	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)	0	0	0	34	1305	5	18	8	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.97			1.00	
Satd. Flow (prot)					3324			1621			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3324			1676			1777	
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)	0	0	0	36	1388	5	19	9	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1429	0	0	28	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.8			1.3			1.3	
Effective Green, g (s)					30.3			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2512			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.43			c0.02				
v/c Ratio					0.57			0.37			0.29	
Uniform Delay, d1					2.1			18.6			18.5	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			3.1			2.0	
Delay (s)					2.4			21.7			20.5	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.4			21.7			20.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	43	1194	12	53	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	47	1312	13	58	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1325			0			773	1420	0	1420	1413	663
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1325			0			773	1420	0	1420	1413	663
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			76	89	100	100	85	97
cM capacity (veh/h)	517			1622			243	131	1084	88	135	409

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	703	669	73	32
Volume Left	47	0	58	0
Volume Right	0	13	0	12
cSH	1622	1700	208	181
Volume to Capacity	0.03	0.39	0.35	0.18
Queue Length 95th (ft)	2	0	37	16
Control Delay (s)	0.8	0.0	31.2	29.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		31.2	29.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1182	2	512	26	0	0	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3361		1618	1631				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1618	1631				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1328	2	575	29	0	0	0	9
RTOR Reduction (vph)	0	0	0	0	0	0	153	153	0	0	0	9
Lane Group Flow (vph)	0	0	0	0	1330	0	146	152	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.2		10.9	10.9				0.7
Effective Green, g (s)					29.2		11.9	11.9				1.7
Actuated g/C Ratio					0.53		0.22	0.22				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1791		351	354				50
v/s Ratio Prot					c0.40							
v/s Ratio Perm							0.09	0.09				c0.00
v/c Ratio					0.74		0.41	0.43				0.01
Uniform Delay, d1					9.9		18.5	18.5				25.7
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.7		0.8	0.8				0.0
Delay (s)					11.6		19.3	19.3				25.8
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.6			19.3			25.8	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1274	192	0	92
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1341	202	0	97
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1341				1341	671
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1341				1341	671
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	75
cM capacity (veh/h)	510				141	394

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	671	671	202	97
Volume Left	0	0	0	0
Volume Right	0	0	202	97
cSH	1700	1700	1700	394
Volume to Capacity	0.39	0.39	0.12	0.25
Queue Length 95th (ft)	0	0	0	24
Control Delay (s)	0.0	0.0	0.0	17.1
Lane LOS				C
Approach Delay (s)	0.0			17.1
Approach LOS				C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	495	1108	0	0	9	100	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	510	1142	0	0	9	103	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			510	510	510	1653	1653	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			510	510	510	1653	1653	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	0	100	
cM capacity (veh/h)			466	563	474	98	390	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	891	762	9	103
Volume Left	0	0	9	0
Volume Right	381	762	0	0
cSH	1700	1700	474	98
Volume to Capacity	0.52	0.45	0.02	1.05
Queue Length 95th (ft)	0	0	1	163
Control Delay (s)	0.0	0.0	12.8	184.0
Lane LOS			B	F
Approach Delay (s)	0.0		169.9	
Approach LOS			F	

Intersection Summary			
Average Delay	10.8		
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	53	0	0	1230	0	487
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	0	0	1337	0	529
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	58	0	0	1337	0	529
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.3			47.6		69.9
Effective Green, g (s)	13.8			48.1		69.9
Actuated g/C Ratio	0.20			0.69		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	349			2412		2787
v/s Ratio Prot	0.03			c0.38		
v/s Ratio Perm						c0.19
v/c Ratio	0.17			0.55		0.19
Uniform Delay, d1	23.3			5.5		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	23.4			6.4		0.1
Level of Service	C			A		A
Approach Delay (s)	23.4			6.4	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	4.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	632	599	487	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1694	1845	3467	
Flt Permitted			0.37	1.00	1.00	
Satd. Flow (perm)			663	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	658	624	507	39
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	658	624	540	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			50.7	55.2	25.3	
Effective Green, g (s)			51.7	55.7	25.8	
Actuated g/C Ratio			0.74	0.80	0.37	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			872	1470	1280	
v/s Ratio Prot			c0.28	0.34	0.16	
v/s Ratio Perm			c0.28			
v/c Ratio			0.75	0.42	0.42	
Uniform Delay, d1			4.7	2.2	16.5	
Progression Factor			0.56	0.08	1.00	
Incremental Delay, d2			2.9	0.7	0.1	
Delay (s)			5.5	0.9	16.6	
Level of Service			A	A	B	
Approach Delay (s)	0.0			3.3	16.6	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	7.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	18.2
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Signalized Intersection Capacity Analysis
301: Simpson Avenue/N Park Street #1012 & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	966	222	0	0	0	22	0	567	152	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0				
Lane Util. Factor	0.95	0.95				1.00		0.95				
Frt	1.00	1.00				0.86		0.97				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2704				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2704				
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)	1039	239	0	0	0	24	0	610	163	0	0	0
RTOR Reduction (vph)	345	88	0	0	0	23	0	24	0	0	0	0
Lane Group Flow (vph)	289	556	0	0	0	1	0	749	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	8%	17%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	25.6	25.6				2.5		29.9				
Effective Green, g (s)	26.1	26.1				1.5		30.4				
Actuated g/C Ratio	0.37	0.37				0.02		0.43				
Clearance Time (s)	4.5	4.5				3.0		4.5				
Vehicle Extension (s)	3.0	3.0				2.0		3.0				
Lane Grp Cap (vph)	603	620				27		1174				
v/s Ratio Prot								c0.28				
v/s Ratio Perm	0.18	0.33				c0.00						
v/c Ratio	0.48	0.90				0.02		0.64				
Uniform Delay, d1	16.8	20.7				33.5		15.5				
Progression Factor	1.22	0.32				1.00		1.00				
Incremental Delay, d2	1.6	12.0				0.1		1.1				
Delay (s)	22.0	18.5				33.6		16.6				
Level of Service	C	B				C		B				
Approach Delay (s)		20.2			33.6			16.6			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
302: Sumner Avenue/N Alder Street/Lincoln Street & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	22	0	0	176	18	53	1509	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.99			1.00				
Flt Protected		0.98			1.00			1.00				
Satd. Flow (prot)		1463			1645			4933				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1271			1645			4933				
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)	17	23	0	0	185	19	56	1588	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	40	0	0	198	0	0	1650	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	15%	5%	3%	5%	0%	0%	0%	0%
Parking (#/hr)		20										
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		13.9			13.9			47.1				
Effective Green, g (s)		14.4			14.4			47.6				
Actuated g/C Ratio		0.21			0.21			0.68				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		261			338			3354				
v/s Ratio Prot					c0.12							
v/s Ratio Perm		0.03						0.33				
v/c Ratio		0.15			0.59			0.49				
Uniform Delay, d1		22.8			25.1			5.4				
Progression Factor		1.02			1.00			0.91				
Incremental Delay, d2		0.3			2.6			0.4				
Delay (s)		23.5			27.7			5.3				
Level of Service		C			C			A				
Approach Delay (s)		23.5			27.7			5.3			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
306: S "L" Street & W Heron Street #1012

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	92	147	0	0	98	116	72	1549	105	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0				
Lane Util. Factor		1.00			0.95	0.95		0.91				
Frt		1.00			0.98	0.85		0.99				
Flt Protected		0.98			1.00	1.00		1.00				
Satd. Flow (prot)		1462			1732	1504		4522				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1234			1732	1504		4522				
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)	97	155	0	0	103	122	76	1631	111	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	19	0	9	0	0	0	0
Lane Group Flow (vph)	0	252	0	0	111	86	0	1809	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	6%	5%	2%	2%	2%
Parking (#/hr)		20						20				
Turn Type	Perm					Perm	Perm					
Protected Phases		4			4			2				
Permitted Phases	4					4	2					
Actuated Green, G (s)		17.5			17.5	17.5		44.0				
Effective Green, g (s)		18.0			18.0	18.0		44.0				
Actuated g/C Ratio		0.26			0.26	0.26		0.63				
Clearance Time (s)		4.5			4.5	4.5		4.0				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		317			445	387		2842				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.06		0.40				
v/c Ratio		0.79			0.25	0.22		0.64				
Uniform Delay, d1		24.3			20.6	20.5		8.0				
Progression Factor		0.93			1.00	1.00		2.12				
Incremental Delay, d2		12.0			0.3	0.3		1.0				
Delay (s)		34.7			20.9	20.8		18.0				
Level of Service		C			C	C		B				
Approach Delay (s)		34.7			20.9			18.0			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	78	31	0	0	73	32	28	1544	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.96			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1799			1786			4382				
Flt Permitted		0.70			1.00			1.00				
Satd. Flow (perm)		1310			1786			4382				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	90	36	0	0	84	37	32	1775	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	126	0	0	106	0	0	1856	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)								40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		11.7			11.7			49.8				
Effective Green, g (s)		12.2			12.2			49.8				
Actuated g/C Ratio		0.17			0.17			0.71				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		228			311			3117				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.10						0.42				
v/c Ratio		0.55			0.34			0.60				
Uniform Delay, d1		26.4			25.4			5.1				
Progression Factor		1.60			1.00			0.23				
Incremental Delay, d2		2.8			0.7			0.7				
Delay (s)		45.1			26.0			1.9				
Level of Service		D			C			A				
Approach Delay (s)		45.1			26.0			1.9			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	238	26	0	0	32	18	62	1715	22	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1426			1418			4391				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1057			1418			4391				
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)	253	28	0	0	34	19	66	1824	23	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	281	0	0	44	0	0	1911	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		20.7			20.7			39.3				
Effective Green, g (s)		21.2			21.2			40.8				
Actuated g/C Ratio		0.30			0.30			0.58				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		320			429			2559				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.27						0.44				
v/c Ratio		0.88			0.10			0.75				
Uniform Delay, d1		23.2			17.6			10.8				
Progression Factor		0.68			1.00			0.61				
Incremental Delay, d2		22.3			0.1			1.7				
Delay (s)		38.0			17.7			8.2				
Level of Service		D			B			A				
Approach Delay (s)		38.0			17.7			8.2			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	54	15	0	0	8	10	23	1686	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.93			1.00				
Flt Protected		0.96			1.00			1.00				
Satd. Flow (prot)		1434			1380			4395				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1132			1380			4395				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	61	17	0	0	9	11	26	1916	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	78	0	0	10	0	0	1959	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		20			20			40				
Turn Type	Perm						Perm					
Protected Phases		4			4			2				
Permitted Phases	4						2					
Actuated Green, G (s)		8.8			8.8			52.2				
Effective Green, g (s)		9.3			9.3			52.7				
Actuated g/C Ratio		0.13			0.13			0.75				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		150			183			3309				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.45				
v/c Ratio		0.52			0.06			0.59				
Uniform Delay, d1		28.3			26.5			3.9				
Progression Factor		0.82			1.00			0.24				
Incremental Delay, d2		3.1			0.1			0.5				
Delay (s)		26.4			26.7			1.4				
Level of Service		C			C			A				
Approach Delay (s)		26.4			26.7			1.4			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	70.0	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			

HCM Signalized Intersection Capacity Analysis
310: S "I" Street & W Wishkah Street #1011

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	57	38	35	36	0	0	0	0	17	1450	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	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1410			1454						4427	
Flt Permitted		1.00			0.79						1.00	
Satd. Flow (perm)		1410			1184						4427	
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)	0	63	42	39	40	0	0	0	0	19	1611	41
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	81	0	0	79	0	0	0	0	0	1669	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.9	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		183			154						3346	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.07						0.38	
v/c Ratio		0.44			0.51						0.50	
Uniform Delay, d1		28.1			28.4						3.4	
Progression Factor		1.00			0.96						0.67	
Incremental Delay, d2		1.7			2.8						0.5	
Delay (s)		29.8			30.0						2.7	
Level of Service		C			C						A	
Approach Delay (s)		29.8			30.0			0.0			2.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
311: Broadway Street & W Wishkah Street #1011

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	148	51	25	76	0	0	0	0	9	1306	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1443			1472						4407	
Flt Permitted		1.00			0.89						1.00	
Satd. Flow (perm)		1443			1328						4407	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	161	55	27	83	0	0	0	0	10	1420	86
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	196	0	0	110	0	0	0	0	0	1509	0
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		14.6			14.6						45.4	
Effective Green, g (s)		15.1			15.1						46.9	
Actuated g/C Ratio		0.22			0.22						0.67	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		311			286						2953	
v/s Ratio Prot		c0.14										
v/s Ratio Perm					0.08						0.34	
v/c Ratio		0.63			0.38						0.51	
Uniform Delay, d1		24.9			23.5						5.8	
Progression Factor		1.00			0.95						0.28	
Incremental Delay, d2		3.9			0.8						0.6	
Delay (s)		28.9			23.0						2.2	
Level of Service		C			C						A	
Approach Delay (s)		28.9			23.0			0.0			2.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
312: S "K" Street & W Wishkah Street #1011

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	77	21	16	45	0	0	0	0	19	1336	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1447			1471						4430	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1447			1340						4430	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	84	23	17	49	0	0	0	0	21	1452	28
RTOR Reduction (vph)	0	17	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	90	0	0	66	0	0	0	0	0	1499	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		20			20						40	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		8.6			8.6						52.9	
Effective Green, g (s)		9.1			9.1						52.9	
Actuated g/C Ratio		0.13			0.13						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		188			174						3348	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.34	
v/c Ratio		0.48			0.38						0.45	
Uniform Delay, d1		28.2			27.9						3.2	
Progression Factor		1.00			0.51						0.22	
Incremental Delay, d2		1.9			1.3						0.4	
Delay (s)		30.1			15.7						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.1			15.7			0.0			1.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
313: S "L" Street & W Wishkah Street #1011

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	106	30	73	93	0	0	0	0	133	1197	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1811			1823						4572	
Flt Permitted		1.00			0.82						1.00	
Satd. Flow (perm)		1811			1522						4572	
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)	0	112	32	77	98	0	0	0	0	140	1260	33
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	129	0	0	175	0	0	0	0	0	1430	0
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)											20	
Turn Type				Perm						Perm		
Protected Phases		4			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		20.0			20.0						41.5	
Effective Green, g (s)		20.5			20.5						41.5	
Actuated g/C Ratio		0.29			0.29						0.59	
Clearance Time (s)		4.5			4.5						4.0	
Lane Grp Cap (vph)		530			446						2711	
v/s Ratio Prot		0.07										
v/s Ratio Perm					c0.11						0.31	
v/c Ratio		0.24			0.39						0.53	
Uniform Delay, d1		18.8			19.8						8.4	
Progression Factor		1.00			0.96						0.82	
Incremental Delay, d2		1.1			2.4						0.7	
Delay (s)		19.9			21.4						7.6	
Level of Service		B			C						A	
Approach Delay (s)		19.9			21.4			0.0			7.6	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	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

HCM Signalized Intersection Capacity Analysis
317: Sumner Avenue/N Alder Street/Lincoln Street #1011 & W Wishkah Street #1011

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	43	173	0	0	0	0	22	510	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					1.00						0.91	0.91
Frt					1.00						0.94	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1349						2559	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1349						2559	1400
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)	0	0	0	46	184	0	0	0	0	23	543	830
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	98	163
Lane Group Flow (vph)	0	0	0	0	230	0	0	0	0	0	858	277
Heavy Vehicles (%)	2%	2%	2%	42%	4%	2%	2%	2%	2%	0%	10%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					17.5						43.5	43.5
Effective Green, g (s)					18.0						44.0	44.0
Actuated g/C Ratio					0.26						0.63	0.63
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					347						1609	880
v/s Ratio Prot												
v/s Ratio Perm					0.17						0.34	0.20
v/c Ratio					0.66						0.53	0.31
Uniform Delay, d1					23.3						7.3	6.0
Progression Factor					0.84						0.58	0.33
Incremental Delay, d2					4.5						1.1	0.8
Delay (s)					24.1						5.3	2.8
Level of Service					C						A	A
Approach Delay (s)		0.0			24.1			0.0			4.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1131	38	0	0	0	0	0	0	19	513	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3107									2722	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3107									2722	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	1300	44	0	0	0	0	0	0	22	590	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	1341	0	0	0	0	0	0	0	0	607	0
Heavy Vehicles (%)	0%	4%	6%	2%	2%	2%	2%	2%	2%	0%	13%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		37.8									23.2	
Effective Green, g (s)		38.3									23.7	
Actuated g/C Ratio		0.55									0.34	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1700									922	
v/s Ratio Prot		c0.43										
v/s Ratio Perm											0.22	
v/c Ratio		0.79									0.66	
Uniform Delay, d1		12.6									19.7	
Progression Factor		0.79									1.44	
Incremental Delay, d2		3.3									1.5	
Delay (s)		13.3									29.8	
Level of Service		B									C	
Approach Delay (s)		13.3			0.0			0.0			29.8	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	120	670	0	0	0	0	0	1523	419	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0			
Lane Util. Factor		0.91						0.95	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		4576						3065	1242			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1242			
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)	126	705	0	0	0	0	0	1603	441	0	0	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	36	0	0	0
Lane Group Flow (vph)	0	821	0	0	0	0	0	1603	405	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	6%	4%	2%	2%	2%
Parking (#/hr)		20						20	20			
Turn Type	Perm								Perm			
Protected Phases		4						2				
Permitted Phases	4								2			
Actuated Green, G (s)		19.4						42.1	42.1			
Effective Green, g (s)		19.4						42.6	42.6			
Actuated g/C Ratio		0.28						0.61	0.61			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1268						1865	756			
v/s Ratio Prot								c0.52				
v/s Ratio Perm		0.18							0.33			
v/c Ratio		0.65						0.86	0.54			
Uniform Delay, d1		22.3						11.2	8.0			
Progression Factor		0.89						1.81	2.02			
Incremental Delay, d2		1.1						4.7	2.3			
Delay (s)		20.8						25.0	18.4			
Level of Service		C						C	B			
Approach Delay (s)		20.8			0.0			23.6			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	594	419	81	1465	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frt					0.94			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3261			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3261			2943				
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)	0	0	0	0	612	432	84	1510	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1028	0	0	1588	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	2%	2%	2%
Parking (#/hr)								40				
Turn Type							Perm					
Protected Phases					4			2				
Permitted Phases							2					
Actuated Green, G (s)					23.7			37.3				
Effective Green, g (s)					24.2			37.8				
Actuated g/C Ratio					0.35			0.54				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1127			1589				
v/s Ratio Prot					c0.32							
v/s Ratio Perm								0.54				
v/c Ratio					0.91			1.00				
Uniform Delay, d1					21.9			16.1				
Progression Factor					1.00			0.79				
Incremental Delay, d2					11.1			16.3				
Delay (s)					33.0			29.1				
Level of Service					C			C				
Approach Delay (s)		0.0			33.0			29.1			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	275	49	0	0	0	0	0	0	373	1244	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0									4.0	
Lane Util. Factor		0.95									0.91	
Frt		0.98									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		2940									4395	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2940									4395	
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)	0	296	53	0	0	0	0	0	0	401	1338	0
RTOR Reduction (vph)	0	25	0	0	0	0	0	0	0	0	53	0
Lane Group Flow (vph)	0	324	0	0	0	0	0	0	0	0	1686	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%
Parking (#/hr)		40									40	
Turn Type										Perm		
Protected Phases		8									2	
Permitted Phases										2		
Actuated Green, G (s)		12.9									48.1	
Effective Green, g (s)		13.4									48.6	
Actuated g/C Ratio		0.19									0.69	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		563									3051	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.38	
v/c Ratio		0.58									0.55	
Uniform Delay, d1		25.7									5.3	
Progression Factor		1.00									0.63	
Incremental Delay, d2		1.4									0.6	
Delay (s)		27.1									4.0	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			4.0	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	360	305	0	0	0	0	0	1372	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	0.98						1.00	
Satd. Flow (prot)				1264	3273						4416	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1264	3273						4416	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	391	332	0	0	0	0	0	1491	70
RTOR Reduction (vph)	0	0	0	18	18	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	217	470	0	0	0	0	0	1555	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Parking (#/hr)				20							40	
Turn Type				Split								
Protected Phases				4	4						2	
Permitted Phases												
Actuated Green, G (s)				17.8	17.8						43.2	
Effective Green, g (s)				18.3	18.3						43.7	
Actuated g/C Ratio				0.26	0.26						0.62	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				330	856						2757	
v/s Ratio Prot				c0.17	0.14						c0.35	
v/s Ratio Perm												
v/c Ratio				0.66	0.55						0.56	
Uniform Delay, d1				23.0	22.3						7.6	
Progression Factor				1.13	1.19						1.00	
Incremental Delay, d2				2.1	0.3						0.8	
Delay (s)				28.1	26.9						8.5	
Level of Service				C	C						A	
Approach Delay (s)		0.0			27.3			0.0			8.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
323: W Wishkah Street #121 #122 & S Chehalis Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1290	37	28	1113	2	356	9	18	17	4	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	
Frt		1.00		1.00	1.00		1.00	0.99			0.95	
Flt Protected		1.00		0.95	1.00		0.95	0.96			0.98	
Satd. Flow (prot)		3329		1727	3342		1681	1673			1732	
Flt Permitted		0.93		0.95	1.00		0.95	0.96			0.98	
Satd. Flow (perm)		3084		1727	3342		1681	1673			1732	
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)	18	1518	44	33	1309	2	419	11	21	20	5	15
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	14	0
Lane Group Flow (vph)	0	1579	0	33	1311	0	226	222	0	0	26	0
Heavy Vehicles (%)	2%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	1%
Turn Type	Perm			Prot			Split			Split		
Protected Phases		2		1	6		3	3		4	4	
Permitted Phases	2											
Actuated Green, G (s)		71.1		5.4	80.5		17.4	17.4			5.1	
Effective Green, g (s)		72.1		5.4	81.5		18.4	18.4			6.1	
Actuated g/C Ratio		0.61		0.05	0.69		0.16	0.16			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1884		79	2308		262	261			90	
v/s Ratio Prot				0.02	c0.39		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.51										
v/c Ratio		0.84		0.42	0.57		0.86	0.85			0.29	
Uniform Delay, d1		18.3		54.8	9.3		48.6	48.4			53.9	
Progression Factor		1.00		1.03	0.60		1.00	1.00			1.00	
Incremental Delay, d2		4.6		2.7	0.8		24.1	21.8			1.8	
Delay (s)		22.9		59.0	6.4		72.7	70.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		22.9			7.7			71.5			55.6	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	1633	104	54	1166	0	220	9	111	52	19	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.90			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (prot)	1727	3313		1727	3343		1665	1553			1750	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3313		1727	3343		1665	1553			1750	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	27	1701	108	56	1215	0	229	9	116	54	20	26
RTOR Reduction (vph)	0	3	0	0	0	0	0	64	0	0	12	0
Lane Group Flow (vph)	27	1806	0	56	1215	0	183	107	0	0	88	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Split			Split		
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.6	65.0		7.7	66.1		14.6	14.6			11.7	
Effective Green, g (s)	6.6	66.0		7.7	67.1		15.6	15.6			12.7	
Actuated g/C Ratio	0.06	0.56		0.07	0.57		0.13	0.13			0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	3.5		2.5	3.5		3.5	3.5			3.5	
Lane Grp Cap (vph)	97	1853		113	1901		220	205			188	
v/s Ratio Prot	0.02	c0.55		0.03	c0.36		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.28	0.97		0.50	0.64		0.83	0.52			0.47	
Uniform Delay, d1	53.4	25.2		53.3	17.2		49.9	47.7			49.5	
Progression Factor	0.80	0.63		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8	12.9		2.5	1.7		23.2	2.7			2.1	
Delay (s)	43.7	28.8		55.8	18.9		73.1	50.4			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		29.0			20.5			62.1			51.6	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	830	3	533	760	0	326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	2.0		4.0
Lane Util. Factor	0.97		0.97	0.91		0.88
Frpb, ped/bikes	1.00		1.00	1.00		1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00
Frt	1.00		0.94	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3442		3145	1616		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3442		3145	1616		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1025	4	658	938	0	402
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1029	0	1089	507	0	402
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	30.1		33.2	75.3		33.2
Effective Green, g (s)	32.1		35.2	75.3		35.2
Actuated g/C Ratio	0.43		0.47	1.00		0.47
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	2.5		2.5			2.5
Lane Grp Cap (vph)	1467		1470	1616		1242
v/s Ratio Prot	c0.30		c0.35	0.31		0.15
v/s Ratio Perm						
v/c Ratio	0.70		0.74	0.31		0.32
Uniform Delay, d1	17.7		16.3	0.0		12.6
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	1.4		1.9	0.5		0.1
Delay (s)	19.1		18.3	0.5		12.7
Level of Service	B		B	A		B
Approach Delay (s)	19.1		12.6		12.7	
Approach LOS	B		B		B	

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	75.3	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			

HCM Unsignalized Intersection Capacity Analysis
331: S L Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	21	0	0	9	19	647	1	3	346	56
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	22	0	0	9	20	681	1	3	364	59
Pedestrians		6			1			1			1	
Lane Width (ft)		15.0			15.0			11.5			11.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1138	1129	401	1116	1158	684	429			683		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1138	1129	401	1116	1158	684	429			683		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	98			100		
cM capacity (veh/h)	172	200	649	176	192	452	1129			909		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	22	9	13	689	3	423
Volume Left	0	0	13	7	3	0
Volume Right	22	9	0	1	0	59
cSH	649	452	1129	1129	909	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.25
Queue Length 95th (ft)	3	2	1	1	0	0
Control Delay (s)	10.7	13.1	8.2	0.3	9.0	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.7	13.1	0.5		0.1	
Approach LOS	B	B				

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	39.0%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
332: S M Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	25	1	10	0	2	4	14	602	2	2	298	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	27	1	11	0	2	4	15	647	2	2	320	31
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1023	1020	336	1015	1034	648	352			649		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1023	1020	336	1015	1034	648	352			649		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	100	98	100	99	99	99			100		
cM capacity (veh/h)	209	234	708	211	230	472	1213			937		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	39	6	15	649	2	352
Volume Left	27	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	261	349	1213	1700	937	1700
Volume to Capacity	0.15	0.02	0.01	0.38	0.00	0.21
Queue Length 95th (ft)	13	1	1	0	0	0
Control Delay (s)	21.2	15.5	8.0	0.0	8.9	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	21.2	15.5	0.2		0.1	
Approach LOS	C	C				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
335: Sumner Avenue/N Alder Street/Lincoln Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	19	0	3	0	5	4	17	400	2	2	226	168
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	22	0	3	0	6	5	20	460	2	2	260	193
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	867	862	356	768	957	461	453			462		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	867	862	356	768	957	461	453			462		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	92	100	100	100	98	99	98			100		
cM capacity (veh/h)	264	289	692	302	244	582	1118			1110		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	20	462	2	453
Volume Left	22	0	20	0	2	0
Volume Right	3	5	0	2	0	193
cSH	289	329	1118	1700	1110	1700
Volume to Capacity	0.09	0.03	0.02	0.27	0.00	0.27
Queue Length 95th (ft)	7	2	1	0	0	0
Control Delay (s)	18.7	16.3	8.3	0.0	8.3	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	18.7	16.3	0.3		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	36.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
336: Simpson Avenue/N Park Street & W State Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	378	37	0	0	0	1	98	1	2	232	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	398	39	0	0	0	1	103	1	2	244	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		359										
pX, platoon unblocked												
vC, conflicting volume	0			437			554	417	417	470	437	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			437			554	417	417	470	437	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	80	100	100	52	99
cM capacity (veh/h)	1604			1134			275	528	638	427	513	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	437	0	105	261
Volume Left	0	0	1	2
Volume Right	39	0	1	15
cSH	1604	1700	524	528
Volume to Capacity	0.00	0.00	0.20	0.49
Queue Length 95th (ft)	0	0	19	68
Control Delay (s)	0.0	0.0	13.6	18.3
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.6	18.3
Approach LOS			B	C

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	657	1	3	626	9	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	706	1	3	673	10	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			708		1387	707
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			708		1387	707
tC, single (s)			4.2		6.9	6.7
tC, 2 stage (s)						
tF (s)			2.3		4.0	3.8
p0 queue free %			100		92	99
cM capacity (veh/h)			864		124	364

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	708	676	12
Volume Left	0	3	10
Volume Right	1	0	2
cSH	1700	864	141
Volume to Capacity	0.42	0.00	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.1	32.9
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	32.9
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	650	0	2	652	10	0	1	0	9	2	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	707	0	2	709	11	0	1	0	10	2	9
Pedestrians		1			2			3			1	
Lane Width (ft)		16.0			16.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	721			710			1458	1454	712	1448	1449	716
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	721			710			1458	1454	712	1448	1449	716
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			100			100	99	100	91	98	98
cM capacity (veh/h)	867			874			103	129	434	104	126	423

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	716	722	1	21
Volume Left	10	2	0	10
Volume Right	0	11	0	9
cSH	867	874	129	157
Volume to Capacity	0.01	0.00	0.01	0.13
Queue Length 95th (ft)	1	0	1	11
Control Delay (s)	0.3	0.1	33.1	31.3
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	33.1	31.3
Approach LOS			D	D

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
352: W Wishkah St & Williams Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	564	90	208	534	1	114	0	264	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	613	98	226	580	1	124	0	287	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	582			711			1698	1698	662	1984	1746	581
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	582			711			1698	1698	662	1984	1746	581
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			75			0	100	38	92	100	100
cM capacity (veh/h)	978			898			59	69	465	14	64	514

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	712	808	411	2
Volume Left	1	226	124	1
Volume Right	98	1	287	1
cSH	978	898	152	28
Volume to Capacity	0.00	0.25	2.71	0.08
Queue Length 95th (ft)	0	25	915	6
Control Delay (s)	0.0	5.8	833.2	146.8
Lane LOS	A	A	F	F
Approach Delay (s)	0.0	5.8	833.2	146.8
Approach LOS			F	F

Intersection Summary				
Average Delay		179.7		
Intersection Capacity Utilization		109.6%	ICU Level of Service	H
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	740	35	14	684	11	6	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	52	813	38	15	752	12	7	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	766			852			1760	1732	834	1731	1745	761
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	766			852			1760	1732	834	1731	1745	761
tC, single (s)	4.1			4.4			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.5			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			98			88	97	99	70	99	92
cM capacity (veh/h)	832			663			56	81	370	63	79	404

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	903	779	11	54
Volume Left	52	15	7	19
Volume Right	38	12	2	34
cSH	832	663	73	136
Volume to Capacity	0.06	0.02	0.15	0.40
Queue Length 95th (ft)	5	2	12	42
Control Delay (s)	1.7	0.6	62.5	48.0
Lane LOS	A	A	F	E
Approach Delay (s)	1.7	0.6	62.5	48.0
Approach LOS			F	E

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	760	0	0	27	709
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	826	0	0	29	771
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			829	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			829	0	0	
tC, single (s)			6.4	6.2	4.2	
tC, 2 stage (s)						
tF (s)			3.5	3.3	2.3	
p0 queue free %			100	100	98	
cM capacity (veh/h)			334	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	826	29	771
Volume Left	0	29	0
Volume Right	826	0	0
cSH	1700	1578	1700
Volume to Capacity	0.49	0.02	0.45
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.3	
Approach LOS			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
355: S Garfield St & W Heron Street

8/19/2009

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	773	5	0	20	0	0
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	849	5	0	22	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised					
Median storage veh)	1					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1702	1702	1704	0
vC1, stage 1 conf vol			1702	1702	0	
vC2, stage 2 conf vol			0	0	1704	
vCu, unblocked vol	0		1702	1702	1704	0
tC, single (s)	4.1		7.1	6.7	6.5	6.2
tC, 2 stage (s)			6.1	5.7	5.5	
tF (s)	2.2		3.5	4.2	4.0	3.3
p0 queue free %	47		100	44	100	100
cM capacity (veh/h)	1604		50	39	62	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	566	289	22
Volume Left	566	283	0
Volume Right	0	5	0
cSH	1604	1604	39
Volume to Capacity	0.53	0.53	0.56
Queue Length 95th (ft)	82	82	50
Control Delay (s)	9.7	9.7	179.9
Lane LOS	A	A	F
Approach Delay (s)	9.7		179.9
Approach LOS			F

Intersection Summary			
Average Delay	14.0		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
356: N Monroe Street & W Heron Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	22	3	0	0	172	8	12	769	21	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	25	3	0	0	195	9	14	874	24	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											1043	
pX, platoon unblocked												
vC, conflicting volume	571	925	0	915	913	449	0			898		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	571	925	0	915	913	449	0			898		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	99	100	100	28	98	99			100		
cM capacity (veh/h)	165	269	1091	226	271	560	1600			752		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	28	205	451	461
Volume Left	25	0	14	0
Volume Right	0	9	0	24
cSH	173	278	1600	1700
Volume to Capacity	0.16	0.74	0.01	0.27
Queue Length 95th (ft)	14	133	1	0
Control Delay (s)	29.8	47.1	0.3	0.0
Lane LOS	D	E	A	
Approach Delay (s)	29.8	47.1	0.1	
Approach LOS	D	E		

Intersection Summary				
Average Delay		9.3		
Intersection Capacity Utilization		45.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
357: N Lincoln Street & W Heron Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	8	6	0	0	16	2	5	783	5	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	8	6	0	0	17	2	5	816	5	0	0	0
Pedestrians								2				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											710	
pX, platoon unblocked												
vC, conflicting volume	429	831	2	834	829	410	0			821		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	429	831	2	834	829	410	0			821		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	98	98	100	100	95	100	100			100		
cM capacity (veh/h)	491	306	1086	259	307	596	1593			804		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	15	19	413	413
Volume Left	8	0	5	0
Volume Right	0	2	0	5
cSH	390	325	1593	1700
Volume to Capacity	0.04	0.06	0.00	0.24
Queue Length 95th (ft)	3	5	0	0
Control Delay (s)	14.6	16.8	0.1	0.0
Lane LOS	B	C	A	
Approach Delay (s)	14.6	16.8	0.1	
Approach LOS	B	C		

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		36.4%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
358: N Washington Street & W Heron Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	92	9	38	728	6	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	12	7	0	0	107	10	44	847	7	0	0	0
Pedestrians		3			4			1				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		4.0			4.0			4.0				
Percent Blockage		0			0			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											350	
pX, platoon unblocked												
vC, conflicting volume	579	949	4	947	945	431	3			857		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	579	949	4	947	945	431	3			857		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.2			2.2		
p0 queue free %	95	97	100	100	52	98	97			100		
cM capacity (veh/h)	216	222	1019	181	223	524	1599			776		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	117	467	430
Volume Left	12	0	44	0
Volume Right	0	10	0	7
cSH	218	235	1599	1700
Volume to Capacity	0.09	0.50	0.03	0.25
Queue Length 95th (ft)	7	64	2	0
Control Delay (s)	23.0	34.6	0.9	0.0
Lane LOS	C	D	A	
Approach Delay (s)	23.0	34.6	0.5	
Approach LOS	C	D		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization		39.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
359: N Washington Street & W Wishkah Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	18	86	42	0	0	0	0	3	536	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	0	14	21	102	50	0	0	0	0	4	638	11
Pedestrians		3			7							
Lane Width (ft)		11.0			11.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			1							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											353	
pX, platoon unblocked	0.86	0.86	0.86	0.86	0.86		0.86					
vC, conflicting volume	679	661	327	362	666	7	652			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	291	270	0	0	276	7	260			7		
tC, single (s)	7.8	6.8	7.0	7.6	6.6	7.0	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.2	3.3	3.6	4.0	3.4	2.2			2.3		
p0 queue free %	100	97	98	87	91	100	100			100		
cM capacity (veh/h)	477	514	924	818	533	1055	1113			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	36	152	323	330
Volume Left	0	102	4	0
Volume Right	21	0	0	11
cSH	701	696	1541	1700
Volume to Capacity	0.05	0.22	0.00	0.19
Queue Length 95th (ft)	4	21	0	0
Control Delay (s)	10.4	11.6	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	10.4	11.6	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.6		
Intersection Capacity Utilization		37.5%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
360: N Lincoln Street & W Wishkah Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	2	16	11	0	0	0	0	10	613	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	13	2	17	12	0	0	0	0	11	659	13
Pedestrians					1			2			3	
Lane Width (ft)					12.0			0.0			16.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											708	
pX, platoon unblocked	0.97	0.97	0.97	0.97	0.97		0.97					
vC, conflicting volume	696	688	338	363	695	4	672			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	636	628	268	294	634	4	611			1		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	97	100	97	97	100	100			99		
cM capacity (veh/h)	346	389	717	603	386	1080	939			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	340	342
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	416	491	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.20
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	14.0	12.8	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	14.0	12.8	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		0.9		
Intersection Capacity Utilization		36.2%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
361: W Wishkah Street & N Monroe Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	567	66	0	30	1	123	42	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	14	603	70	0	32	1	131	45	0
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					1049							
pX, platoon unblocked												
vC, conflicting volume	673			0			688	666	339	348	701	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	673			0			688	666	339	348	701	0
tC, single (s)	4.1			4.3			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	92	100	76	88	100
cM capacity (veh/h)	913			1565			302	379	663	542	360	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	315	372	33	176
Volume Left	14	0	0	131
Volume Right	0	70	1	0
cSH	1565	1700	385	480
Volume to Capacity	0.01	0.22	0.09	0.37
Queue Length 95th (ft)	1	0	7	41
Control Delay (s)	0.4	0.0	15.2	16.7
Lane LOS	A		C	C
Approach Delay (s)	0.2		15.2	16.7
Approach LOS			C	C

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
362: S Division Street & W Heron Street

8/19/2009

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	4	0	4	0	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	17	0	49	4	0	4	0	5	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	53			29			72	80	51	74	74	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	53			29			72	80	51	74	74	21
tC, single (s)	4.1			4.1			7.1	7.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.9	3.3	3.6	4.1	3.4
p0 queue free %	100			100			100	99	100	99	100	100
cM capacity (veh/h)	1552			1584			924	656	1023	897	805	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	53	4	5
Volume Left	0	0	0	5
Volume Right	17	4	0	0
cSH	1552	1584	656	897
Volume to Capacity	0.00	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1	0
Control Delay (s)	0.0	0.0	10.5	9.0
Lane LOS			B	A
Approach Delay (s)	0.0	0.0	10.5	9.0
Approach LOS			B	A

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		14.2%	ICU Level of Service	A
Analysis Period (min)		15	

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	10	48	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	1	11	52	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	66	53	53			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	66	53	53			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	939	1015	1565			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	53
Volume Left	1	1	0
Volume Right	1	0	1
cSH	975	1565	1700
Volume to Capacity	0.00	0.00	0.03
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.7	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
371: Port Industrial Road & W 1st Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	35	489	4	4	559	6	16	3	5	5	0	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	40	562	5	5	643	7	18	3	6	6	0	49
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	643			567			1346	1297	564	1305	1302	646
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	643			567			1346	1297	564	1305	1302	646
tC, single (s)	4.2			4.1			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			100			83	98	99	95	100	89
cM capacity (veh/h)	901			1015			105	148	508	123	147	456

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	40	567	5	649	28	55
Volume Left	40	0	5	0	18	6
Volume Right	0	5	0	7	6	49
cSH	901	1700	1015	1700	132	355
Volume to Capacity	0.04	0.33	0.00	0.38	0.21	0.16
Queue Length 95th (ft)	4	0	0	0	19	14
Control Delay (s)	9.2	0.0	8.6	0.0	39.4	17.0
Lane LOS	A		A		E	C
Approach Delay (s)	0.6		0.1		39.4	17.0
Approach LOS					E	C

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
372: Port Industrial Road & Myrtle Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	413	10	15	490	119	9	14	39	68	6	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	449	11	16	533	129	10	15	42	74	7	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	662			460			1154	1186	454	1171	1127	597
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662			460			1154	1186	454	1171	1127	597
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	98			98			93	91	93	48	97	94
cM capacity (veh/h)	890			1060			147	173	581	143	198	505

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	478	678	67	110
Volume Left	18	16	10	74
Volume Right	11	129	42	29
cSH	890	1060	296	181
Volume to Capacity	0.02	0.02	0.23	0.61
Queue Length 95th (ft)	2	1	21	84
Control Delay (s)	0.6	0.4	20.7	51.6
Lane LOS	A	A	C	F
Approach Delay (s)	0.6	0.4	20.7	51.6
Approach LOS			C	F

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
380: Bay Avenue & 23rd Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	367	2	4	0	381	0	32	29	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	412	2	4	0	428	0	36	33	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	428			415			445	873	413	494	446	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	428			415			445	873	413	494	446	0
tC, single (s)	4.2			*6.5			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			*4.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	87	95	100	100	100
cM capacity (veh/h)	1105			531			516	283	639	410	498	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	415	4	428	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	428	33
cSH	1105	1700	531	1700	385
Volume to Capacity	0.01	0.24	0.01	0.25	0.18
Queue Length 95th (ft)	1	0	1	0	16
Control Delay (s)	8.3	0.0	11.8	0.0	16.4
Lane LOS	A		B		C
Approach Delay (s)	0.2		0.1		16.4
Approach LOS					C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
381: Earely Industrial Way & Private Driveway

8/19/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	40	0	2	0	0	0	31	51	2	32	0
Sign Control		Free		Free			Stop			Stop	
Grade		0%		0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	47	0	2	0	0	0	36	60	2	38	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type		None		None							
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			2		114	96	0	174	95	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		114	96	0	174	95	1
tC, single (s)	4.2			4.1		7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100		100	95	94	100	95	100
cM capacity (veh/h)	1554			1620		805	764	1076	706	774	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	49	0	96	40
Volume Left	47	0	0	2
Volume Right	2	0	60	0
cSH	1554	1700	932	770
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	9	4
Control Delay (s)	7.0	0.0	9.3	9.9
Lane LOS	A		A	A
Approach Delay (s)	7.0	0.0	9.3	9.9
Approach LOS			A	A

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	14.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	363	4	15	469	31	10	8	25	32	8	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		1.00			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.97	1.00		0.97	
Satd. Flow (prot)		1771			1845			1761	1538		1749	
Flt Permitted		0.98			0.99			0.81	1.00		0.81	
Satd. Flow (perm)		1745			1824			1472	1538		1451	
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)	12	390	4	16	504	33	11	9	27	34	9	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	406	0	0	551	0	0	20	4	0	45	0
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	5%	5%	5%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4		4	4		
Actuated Green, G (s)		24.1			24.1			5.6	5.6		5.6	
Effective Green, g (s)		24.6			24.6			6.1	6.1		6.1	
Actuated g/C Ratio		0.64			0.64			0.16	0.16		0.16	
Clearance Time (s)		4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		1109			1159			232	242		229	
v/s Ratio Prot												
v/s Ratio Perm		0.23			c0.30			0.01	0.00		c0.03	
v/c Ratio		0.37			0.48			0.09	0.02		0.20	
Uniform Delay, d1		3.3			3.7			13.9	13.8		14.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.2	0.0		0.4	
Delay (s)		3.6			4.0			14.1	13.8		14.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.6			4.0			13.9			14.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	38.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	207	15	2	278	19	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	235	17	2	316	22	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			252		556	235
vC1, stage 1 conf vol					235	
vC2, stage 2 conf vol					320	
vCu, unblocked vol			252		556	235
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		97	100
cM capacity (veh/h)			1319		633	775

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	235	17	2	316	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1319	1700	649
Volume to Capacity	0.14	0.01	0.00	0.19	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.8
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.8
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	24.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	121	1246	11	0	0	0	0	56	25	16	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						0.95			0.95	
Frt		1.00						0.95			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3344						3237			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3344						3237			3066	
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)	130	1340	12	0	0	0	0	60	27	17	88	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	24	0	0	0	0
Lane Group Flow (vph)	0	1482	0	0	0	0	0	63	0	0	105	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			2	
Permitted Phases	4									2		
Actuated Green, G (s)		54.4						6.6			6.6	
Effective Green, g (s)		54.9						7.1			7.1	
Actuated g/C Ratio		0.78						0.10			0.10	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2623						328			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.44									c0.03	
v/c Ratio		0.56						0.19			0.34	
Uniform Delay, d1		2.9						28.8			29.3	
Progression Factor		1.00						1.00			0.58	
Incremental Delay, d2		0.9						0.3			0.6	
Delay (s)		3.8						29.1			17.5	
Level of Service		A						C			B	
Approach Delay (s)		3.8			0.0			29.1			17.5	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1204	65	0	0	0	0	81	123	79	83	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.92			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3335						1711			1621	
Flt Permitted		1.00						1.00			0.71	
Satd. Flow (perm)		3335						1711			1173	
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)	18	1416	76	0	0	0	0	95	145	93	98	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1506	0	0	0	0	0	217	0	0	191	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)		0									0	
Turn Type	Perm									Perm		
Protected Phases		2						4			4	
Permitted Phases	2									4		
Actuated Green, G (s)		31.8						15.3			15.3	
Effective Green, g (s)		31.8						15.3			15.3	
Actuated g/C Ratio		0.58						0.28			0.28	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		1925						475			326	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.45									c0.16	
v/c Ratio		0.78						0.46			0.59	
Uniform Delay, d1		9.0						16.5			17.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.1						0.7			2.7	
Delay (s)		11.0						17.2			19.8	
Level of Service		B						B			B	
Approach Delay (s)		11.0			0.0			17.2			19.8	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1191	18	0	0	0	0	26	25	26	28	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.93			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3352						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3352						1597			1348	
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)	24	1228	19	0	0	0	0	27	26	27	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1270	0	0	0	0	0	30	0	0	56	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Parking (#/hr)		0						0			0	
Turn Type	Perm									Perm		
Protected Phases		4						2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		31.0						4.5			4.5	
Effective Green, g (s)		31.5						5.0			5.0	
Actuated g/C Ratio		0.71						0.11			0.11	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2373						179			151	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.38									c0.04	
v/c Ratio		0.54						0.17			0.37	
Uniform Delay, d1		3.1						17.9			18.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.4			1.5	
Delay (s)		3.3						18.3			19.8	
Level of Service		A						B			B	
Approach Delay (s)		3.3			0.0			18.3			19.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	44.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
418: Simpson Avenue/N Park Street #1012 & Ontario Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	48	1214	19	0	0	0	0	31	37	44	45	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	49	1252	20	0	0	0	0	32	38	45	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1271			1384	1360	636	779	1370	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1271			1384	1360	636	779	1370	0
tC, single (s)	4.2			4.1			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	77	91	79	68	100
cM capacity (veh/h)	1607			542			75	141	418	212	143	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	675	645	70	92
Volume Left	49	0	0	45
Volume Right	0	20	38	0
cSH	1607	1700	221	171
Volume to Capacity	0.03	0.38	0.32	0.54
Queue Length 95th (ft)	2	0	33	68
Control Delay (s)	0.9	0.0	28.7	48.3
Lane LOS	A		D	E
Approach Delay (s)	0.4		28.7	48.3
Approach LOS			D	E

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	876	12	0	0	0	0	458	9	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0				
Lane Util. Factor	1.00	0.95						0.95				
Frt	1.00	1.00						1.00				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1752	3323						3494				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3494				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	952	13	0	0	0	0	498	10	0	0	0
RTOR Reduction (vph)	55	2	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	55	964	0	0	0	0	0	506	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	3%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	20.0	20.0						12.0				
Effective Green, g (s)	21.0	21.0						13.0				
Actuated g/C Ratio	0.50	0.50						0.31				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	876	1662						1081				
v/s Ratio Prot		c0.29						c0.14				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.58						0.47				
Uniform Delay, d1	5.4	7.4						11.7				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.5						0.3				
Delay (s)	5.5	7.9						12.0				
Level of Service	A	A						B				
Approach Delay (s)		7.6			0.0			12.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1166	71	0	0	0	0	27	174	42	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00					0.95	0.95		1.00	
Frt		1.00	0.85					0.89	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1575	1504		1811	
Flt Permitted		1.00	1.00					1.00	1.00		0.74	
Satd. Flow (perm)		2893	1300					1575	1504		1385	
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)	18	1254	76	0	0	0	0	29	187	45	34	0
RTOR Reduction (vph)	0	0	8	0	0	0	0	36	36	0	0	0
Lane Group Flow (vph)	0	1272	68	0	0	0	0	73	71	0	79	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40	20									
Turn Type	Split		Perm						Perm	Perm		
Protected Phases	6	6						4			8	
Permitted Phases			6						4	8		
Actuated Green, G (s)		53.0	53.0					8.0	8.0		8.0	
Effective Green, g (s)		53.5	53.5					8.5	8.5		8.5	
Actuated g/C Ratio		0.76	0.76					0.12	0.12		0.12	
Clearance Time (s)		4.5	4.5					4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0					3.0	3.0		3.0	
Lane Grp Cap (vph)		2211	994					191	183		168	
v/s Ratio Prot		c0.44						0.05				
v/s Ratio Perm			0.05						0.05		c0.06	
v/c Ratio		0.58	0.07					0.38	0.39		0.47	
Uniform Delay, d1		3.5	2.1					28.3	28.4		28.7	
Progression Factor		0.28	0.30					1.00	1.00		1.00	
Incremental Delay, d2		1.0	0.1					1.3	1.4		2.1	
Delay (s)		1.9	0.7					29.6	29.7		30.7	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.9			0.0			29.7			30.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	24	1136	25	0	0	0	0	12	88	8	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.88			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		2883						1314			1459	
Flt Permitted		1.00						1.00			0.86	
Satd. Flow (perm)		2883						1314			1286	
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)	25	1196	26	0	0	0	0	13	93	8	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	43	0	0	0	0
Lane Group Flow (vph)	0	1246	0	0	0	0	0	63	0	0	19	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Perm		
Protected Phases		6						8			8	
Permitted Phases	6									8		
Actuated Green, G (s)		54.1						7.9			7.9	
Effective Green, g (s)		54.1						7.9			7.9	
Actuated g/C Ratio		0.77						0.11			0.11	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2228						148			145	
v/s Ratio Prot								c0.05				
v/s Ratio Perm		0.43									0.01	
v/c Ratio		0.56						0.43			0.13	
Uniform Delay, d1		3.2						28.9			28.0	
Progression Factor		0.38						1.00			1.00	
Incremental Delay, d2		0.7						2.0			0.4	
Delay (s)		1.9						30.9			28.4	
Level of Service		A						C			C	
Approach Delay (s)		1.9			0.0			30.9			28.4	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	968	16	0	0	0	0	0	44	303	227	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	0.99	
Satd. Flow (prot)		2888							1302	1681	1405	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2888							1302	1681	1405	
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)	0	1019	17	0	0	0	0	0	46	319	239	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	39	155	10	0
Lane Group Flow (vph)	0	1034	0	0	0	0	0	0	7	120	274	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	1%	2%	2%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		29.0							9.5	18.0	18.0	
Effective Green, g (s)		29.5							10.0	18.5	18.5	
Actuated g/C Ratio		0.42							0.14	0.26	0.26	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1217							186	444	371	
v/s Ratio Prot		c0.36							c0.01	0.07	c0.20	
v/s Ratio Perm												
v/c Ratio		0.85							0.04	0.27	0.74	
Uniform Delay, d1		18.3							25.8	20.4	23.5	
Progression Factor		1.11							1.00	1.00	1.00	
Incremental Delay, d2		6.9							0.4	1.5	12.5	
Delay (s)		27.2							26.2	21.9	36.0	
Level of Service		C							C	C	D	
Approach Delay (s)		27.2			0.0			26.2			29.1	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	8	415	12	0	0	0	0	45	26	490	48	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						1.00		0.95	0.95	
Frt		1.00						0.95		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2880						1416		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2880						1416		1681	1360	
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)	9	441	13	0	0	0	0	48	28	521	51	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	460	0	0	0	0	0	51	0	287	285	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		18.7						6.8		31.0	31.0	
Effective Green, g (s)		19.2						7.3		31.5	31.5	
Actuated g/C Ratio		0.27						0.10		0.45	0.45	
Clearance Time (s)		4.5						4.5		4.5	4.5	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		790						148		756	612	
v/s Ratio Prot								c0.04		0.17	c0.21	
v/s Ratio Perm		0.16										
v/c Ratio		0.58						0.34		0.38	0.47	
Uniform Delay, d1		21.9						29.1		12.8	13.4	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.1						1.4		1.4	2.5	
Delay (s)		23.0						30.5		14.2	15.9	
Level of Service		C						C		B	B	
Approach Delay (s)		23.0			0.0			30.5			15.1	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	0	339	0	538	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	16	12	12
Total Lost time (s)		4.0		4.0		
Lane Util. Factor		1.00		1.00		
Frpb, ped/bikes		1.00		1.00		
Flpb, ped/bikes		1.00		1.00		
Frt		0.86		1.00		
Flt Protected		1.00		1.00		
Satd. Flow (prot)		1791		2111		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1791		2111		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	377	0	598	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	377	0	598	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	4%	2%	2%	0%	0%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		29.6		29.6		
Effective Green, g (s)		29.6		29.6		
Actuated g/C Ratio		0.75		0.75		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1335		1574		
v/s Ratio Prot		0.21		c0.28		
v/s Ratio Perm						
v/c Ratio		0.28		0.38		
Uniform Delay, d1		1.6		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.1		0.2		
Delay (s)		1.7		1.9		
Level of Service		A		A		
Approach Delay (s)	1.7			1.9	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	39.7	Sum of lost time (s)	10.1
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
450: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Market Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	919	23	18	167	0	0	92	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					1.00			1.00			0.89	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					3490			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3490			3044			2995	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	14	957	24	19	174	0	0	96	258
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	73	0
Lane Group Flow (vph)	0	0	0	0	994	0	0	193	0	0	281	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Parking (#/hr)								0			0	
Turn Type				Perm			Perm					
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					48.8			12.2			12.2	
Effective Green, g (s)					49.3			12.7			12.7	
Actuated g/C Ratio					0.70			0.18			0.18	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2458			552			543	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.28			0.06				
v/c Ratio					0.40			0.35			0.52	
Uniform Delay, d1					4.3			25.0			25.9	
Progression Factor					1.37			1.04			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					6.3			26.3			26.7	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.3			26.3			26.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
451: Sumner Avenue/N Alder Street/Lincoln Street #1011 & W First Street

8/19/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1227	19	13	389	0	0	52	278
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	4.0
Lane Util. Factor					0.95			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			1.00			1.00	1.00
Satd. Flow (prot)					3353			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3353			1679			1710	1615
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)	0	0	0	15	1305	20	14	414	0	0	55	296
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	47
Lane Group Flow (vph)	0	0	0	0	1338	0	0	428	0	0	55	249
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)					0			0			0	
Turn Type				Perm			Perm					Perm
Protected Phases					4			2			2	
Permitted Phases				4			2					2
Actuated Green, G (s)					42.5			18.5			18.5	18.5
Effective Green, g (s)					43.0			19.0			19.0	19.0
Actuated g/C Ratio					0.61			0.27			0.27	0.27
Clearance Time (s)					4.5			4.5			4.5	4.5
Lane Grp Cap (vph)					2060			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.40			c0.25				0.15
v/c Ratio					0.65			0.94			0.12	0.57
Uniform Delay, d1					8.7			24.9			19.2	22.0
Progression Factor					0.66			1.00			1.00	1.00
Incremental Delay, d2					1.5			29.3			0.5	5.3
Delay (s)					7.2			54.2			19.7	27.3
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.2			54.2			26.1	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1142	94	32	69	0	0	215	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		1.00			1.00	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			0.96	
Flt Protected					1.00	1.00		0.98			1.00	
Satd. Flow (prot)					3567	1554		1815			1795	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3567	1554		1552			1795	
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)	0	0	0	46	1202	99	34	73	0	0	226	102
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1248	56	0	107	0	0	304	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					29.5	29.5		15.0			15.0	
Effective Green, g (s)					29.5	29.5		15.0			15.0	
Actuated g/C Ratio					0.56	0.56		0.29			0.29	
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)					2004	873		443			513	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.35	0.04		0.07				
v/c Ratio					0.62	0.06		0.24			0.59	
Uniform Delay, d1					7.8	5.2		14.4			16.1	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.6	0.0		0.3			1.8	
Delay (s)					8.4	5.3		14.7			18.0	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.1			14.7			18.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	52.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.9%	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)	0	0	0	34	1305	5	18	8	0	0	11	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	
Lane Util. Factor					0.95			1.00			1.00	
Frt					1.00			1.00			0.94	
Flt Protected					1.00			0.97			1.00	
Satd. Flow (prot)					3324			1621			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3324			1676			1777	
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)	0	0	0	36	1388	5	19	9	0	0	12	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1429	0	0	28	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	0%	0%	0%
Parking (#/hr)					0			0				
Turn Type				Perm			Perm					
Protected Phases					8			2			6	
Permitted Phases				8			2					
Actuated Green, G (s)					29.8			1.3			1.3	
Effective Green, g (s)					30.3			1.8			1.8	
Actuated g/C Ratio					0.76			0.04			0.04	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2512			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.43			c0.02				
v/c Ratio					0.57			0.37			0.29	
Uniform Delay, d1					2.1			18.6			18.5	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			3.1			2.0	
Delay (s)					2.4			21.7			20.5	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.4			21.7			20.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
468: Sumner Avenue/N Alder Street/Lincoln Street #1011 & Ontario Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	43	1194	12	53	13	0	0	18	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	47	1312	13	58	14	0	0	20	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1325			0			773	1420	0	1420	1413	663
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1325			0			773	1420	0	1420	1413	663
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			76	89	100	100	85	97
cM capacity (veh/h)	517			1622			243	131	1084	88	135	409

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	703	669	73	32
Volume Left	47	0	58	0
Volume Right	0	13	0	12
cSH	1622	1700	208	181
Volume to Capacity	0.03	0.39	0.35	0.18
Queue Length 95th (ft)	2	0	37	16
Control Delay (s)	0.8	0.0	31.2	29.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		31.2	29.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
471: Sumner Avenue/N Alder Street/Lincoln Street #1011 & 23rd Street

8/19/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1182	2	512	26	0	0	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0				4.0
Lane Util. Factor					0.95		0.95	0.95				1.00
Frt					1.00		1.00	1.00				0.86
Flt Protected					1.00		0.95	0.96				1.00
Satd. Flow (prot)					3361		1618	1631				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1618	1631				1611
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	0	1328	2	575	29	0	0	0	9
RTOR Reduction (vph)	0	0	0	0	0	0	153	153	0	0	0	9
Lane Group Flow (vph)	0	0	0	0	1330	0	146	152	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	5%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.2		10.9	10.9				0.7
Effective Green, g (s)					29.2		11.9	11.9				1.7
Actuated g/C Ratio					0.53		0.22	0.22				0.03
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1791		351	354				50
v/s Ratio Prot					c0.40							
v/s Ratio Perm							0.09	0.09				c0.00
v/c Ratio					0.74		0.41	0.43				0.01
Uniform Delay, d1					9.9		18.5	18.5				25.7
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.7		0.8	0.8				0.0
Delay (s)					11.6		19.3	19.3				25.8
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.6			19.3			25.8	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1274	192	0	96
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	1341	202	0	101
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1341				1341	671
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1341				1341	671
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	74
cM capacity (veh/h)	510				141	394

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	671	671	202	101
Volume Left	0	0	0	0
Volume Right	0	0	202	101
cSH	1700	1700	1700	394
Volume to Capacity	0.39	0.39	0.12	0.26
Queue Length 95th (ft)	0	0	0	25
Control Delay (s)	0.0	0.0	0.0	17.2
Lane LOS				C
Approach Delay (s)	0.0			17.2
Approach LOS				C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
479: Sumner Avenue/N Alder Street/Lincoln Street #1011 & 6th Street

8/19/2009

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	499	1108	0	0	9	100	0	0
Sign Control	Free		Stop		Stop		Free	
Grade	0%		0%		0%		0%	
Peak Hour Factor	0.97	0.97	0.92	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	514	1142	0	0	9	103	0	0
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None						None	
Median storage veh)								
Upstream signal (ft)							374	
pX, platoon unblocked								
vC, conflicting volume			514	514	514	1657	1657	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			514	514	514	1657	1657	
tC, single (s)			6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)								
tF (s)			4.0	3.3	3.5	4.0	2.2	
p0 queue free %			100	100	98	0	100	
cM capacity (veh/h)			464	560	471	98	389	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	895	762	9	103
Volume Left	0	0	9	0
Volume Right	381	762	0	0
cSH	1700	1700	471	98
Volume to Capacity	0.53	0.45	0.02	1.05
Queue Length 95th (ft)	0	0	2	164
Control Delay (s)	0.0	0.0	12.8	186.5
Lane LOS			B	F
Approach Delay (s)	0.0		172.2	
Approach LOS			F	

Intersection Summary			
Average Delay	10.9		
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	53	0	0	1230	0	497
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0		4.0
Lane Util. Factor	1.00			0.95		0.88
Frt	1.00			1.00		0.85
Flt Protected	0.95			1.00		1.00
Satd. Flow (prot)	1770			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1770			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	0	0	1337	0	540
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	58	0	0	1337	0	540
Heavy Vehicles (%)	2%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	13.3			47.7		70.0
Effective Green, g (s)	13.8			48.2		70.0
Actuated g/C Ratio	0.20			0.69		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	349			2413		2787
v/s Ratio Prot	0.03			c0.38		
v/s Ratio Perm						c0.19
v/c Ratio	0.17			0.55		0.19
Uniform Delay, d1	23.3			5.5		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	23.4			6.3		0.1
Level of Service	C			A		A
Approach Delay (s)	23.4			6.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	632	599	497	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Total Lost time (s)			4.0	4.0	4.0	
Lane Util. Factor			1.00	1.00	0.95	
Frt			1.00	1.00	0.99	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			1694	1845	3468	
Flt Permitted			0.36	1.00	1.00	
Satd. Flow (perm)			651	1845	3468	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	658	624	518	39
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	658	624	551	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			50.8	55.3	25.4	
Effective Green, g (s)			51.8	55.8	25.9	
Actuated g/C Ratio			0.74	0.80	0.37	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			868	1471	1283	
v/s Ratio Prot			c0.28	0.34	0.16	
v/s Ratio Perm			c0.28			
v/c Ratio			0.76	0.42	0.43	
Uniform Delay, d1			4.9	2.2	16.5	
Progression Factor			0.56	0.08	1.00	
Incremental Delay, d2			3.0	0.7	0.1	
Delay (s)			5.7	0.9	16.6	
Level of Service			A	A	B	
Approach Delay (s)	0.0			3.4	16.6	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	7.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	18.2
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

9/10/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	468	34	186	468	11	76	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	514	37	204	514	12	84	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			552			1599	1571	535	1570	1584	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			552			1599	1571	535	1570	1584	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			70			0	97	100	71	98	94
cM capacity (veh/h)	1021			691			60	75	548	65	72	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	602	731	88	54
Volume Left	51	204	84	19
Volume Right	37	12	2	34
cSH	1021	691	61	147
Volume to Capacity	0.05	0.30	1.43	0.37
Queue Length 95th (ft)	4	31	191	38
Control Delay (s)	1.3	7.3	379.5	43.0
Lane LOS	A	A	F	E
Approach Delay (s)	1.3	7.3	379.5	43.0
Approach LOS			F	E

Intersection Summary			
Average Delay	28.3		
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

9/10/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	561	89	209	539	10	0	1	376	9	2	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	610	97	227	586	11	0	1	409	10	2	9
Pedestrians		1			2			3			1	
Lane Width (ft)		14.0			14.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	598			710			1732	1733	663	2087	1776	593
vC1, stage 1 conf vol							681	681		1047	1047	
vC2, stage 2 conf vol							1051	1052		1041	729	
vCu, unblocked vol	598			710			1732	1733	663	2087	1776	593
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)							6.1	5.5		6.2	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			75			100	99	12	0	99	98
cM capacity (veh/h)	964			897			175	198	463	3	152	497

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	10	707	227	597	410	21
Volume Left	10	0	227	0	0	10
Volume Right	0	97	0	11	409	9
cSH	964	1700	897	1700	461	7
Volume to Capacity	0.01	0.42	0.25	0.35	0.89	2.85
Queue Length 95th (ft)	1	0	25	0	240	94
Control Delay (s)	8.8	0.0	10.4	0.0	49.1	1818.5
Lane LOS	A		B		E	F
Approach Delay (s)	0.1		2.9		49.1	1818.5
Approach LOS					E	F

Intersection Summary			
Average Delay	30.5		
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
352: W Wishkah St & Williams Street

9/10/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	564	90	208	534	1	0	0	378	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	613	98	226	580	1	0	0	411	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	582			711			1698	1698	662	2059	1746	581
vC1, stage 1 conf vol							664	664		1033	1033	
vC2, stage 2 conf vol							1034	1034		1026	713	
vCu, unblocked vol	582			711			1698	1698	662	2059	1746	581
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			75			100	100	12	72	100	100
cM capacity (veh/h)	978			898			191	208	465	4	164	514

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	1	711	226	582	411	2
Volume Left	1	0	226	0	0	1
Volume Right	0	98	0	1	411	1
cSH	978	1700	898	1700	465	8
Volume to Capacity	0.00	0.42	0.25	0.34	0.88	0.29
Queue Length 95th (ft)	0	0	25	0	237	16
Control Delay (s)	8.7	0.0	10.4	0.0	47.8	614.8
Lane LOS	A		B		E	F
Approach Delay (s)	0.0		2.9		47.8	614.8
Approach LOS					E	F

Intersection Summary			
Average Delay	12.1		
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

9/10/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	477	80	118	477	11	119	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	52	524	88	130	524	12	131	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		14.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	538			612			1491	1469	570	1424	1507	533
vC1, stage 1 conf vol							671	671		792	792	
vC2, stage 2 conf vol							819	798		633	715	
vCu, unblocked vol	538			612			1491	1469	570	1424	1507	533
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			87			41	99	100	92	100	94
cM capacity (veh/h)	1013			962			221	256	524	239	233	545

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	52	612	130	536	135	54
Volume Left	52	0	130	0	131	19
Volume Right	0	88	0	12	2	34
cSH	1013	1700	962	1700	224	370
Volume to Capacity	0.05	0.36	0.13	0.32	0.60	0.15
Queue Length 95th (ft)	4	0	12	0	87	13
Control Delay (s)	8.7	0.0	9.3	0.0	43.0	16.4
Lane LOS	A		A		E	C
Approach Delay (s)	0.7		1.8		43.0	16.4
Approach LOS					E	C

Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

9/10/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	477	124	221	477	11	119	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	52	524	136	243	524	12	131	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		14.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	538			660			1741	1720	594	1651	1782	533
vC1, stage 1 conf vol							696	696		1018	1018	
vC2, stage 2 conf vol							1046	1024		633	764	
vCu, unblocked vol	538			660			1741	1720	594	1651	1782	533
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			74			1	99	100	88	99	94
cM capacity (veh/h)	1013			928			133	168	507	151	132	545

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	52	660	243	536	135	54
Volume Left	52	0	243	0	131	19
Volume Right	0	136	0	12	2	34
cSH	1013	1700	928	1700	135	277
Volume to Capacity	0.05	0.39	0.26	0.32	1.00	0.19
Queue Length 95th (ft)	4	0	26	0	179	18
Control Delay (s)	8.7	0.0	10.3	0.0	142.6	21.1
Lane LOS	A		B		F	C
Approach Delay (s)	0.6		3.2		142.6	21.1
Approach LOS					F	C

Intersection Summary			
Average Delay	13.9		
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

9/10/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	468	34	186	468	11	76	2	164	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	51	514	37	204	514	12	84	2	180	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528			552			1599	1571	535	1749	1584	523
vC1, stage 1 conf vol							634	634		931	931	
vC2, stage 2 conf vol							965	937		817	653	
vCu, unblocked vol	528			552			1599	1571	535	1749	1584	523
tC, single (s)	4.1			5.0			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			3.0			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			70			42	99	67	43	99	94
cM capacity (veh/h)	1021			691			145	180	548	33	179	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	602	731	266	54
Volume Left	51	204	84	19
Volume Right	37	12	180	34
cSH	1021	691	290	85
Volume to Capacity	0.05	0.30	0.92	0.63
Queue Length 95th (ft)	4	31	215	74
Control Delay (s)	1.3	7.3	72.7	102.1
Lane LOS	A	A	F	F
Approach Delay (s)	1.3	7.3	72.7	102.1
Approach LOS			F	F

Intersection Summary			
Average Delay	18.7		
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

9/10/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	477	80	118	477	11	119	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	52	524	88	130	524	12	131	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	538			612			1491	1469	570	1468	1507	533
vC1, stage 1 conf vol							671	671		792	792	
vC2, stage 2 conf vol							819	798		677	715	
vCu, unblocked vol	538			612			1491	1469	570	1468	1507	533
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			87			41	99	100	92	100	94
cM capacity (veh/h)	1013			962			221	256	524	228	233	545

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	664	130	536	135	54
Volume Left	52	130	0	131	19
Volume Right	88	0	12	2	34
cSH	1013	962	1700	224	361
Volume to Capacity	0.05	0.13	0.32	0.60	0.15
Queue Length 95th (ft)	4	12	0	87	13
Control Delay (s)	1.3	9.3	0.0	43.0	16.7
Lane LOS	A	A		E	C
Approach Delay (s)	1.3	1.8		43.0	16.7
Approach LOS				E	C

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
353: W Wishkah St & S Division Street

9/10/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	477	124	221	477	11	119	2	2	17	1	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	52	524	136	243	524	12	131	2	2	19	1	34
Pedestrians		1			2						2	
Lane Width (ft)		16.0			16.0						16.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	538			660			1741	1720	594	1719	1782	533
vC1, stage 1 conf vol							696	696		1018	1018	
vC2, stage 2 conf vol							1046	1024		701	764	
vCu, unblocked vol	538			660			1741	1720	594	1719	1782	533
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			74			1	99	100	86	99	94
cM capacity (veh/h)	1013			928			133	168	507	134	132	545

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	712	243	536	135	54
Volume Left	52	243	0	131	19
Volume Right	136	0	12	2	34
cSH	1013	928	1700	135	256
Volume to Capacity	0.05	0.26	0.32	1.00	0.21
Queue Length 95th (ft)	4	26	0	179	19
Control Delay (s)	1.3	10.3	0.0	142.6	22.8
Lane LOS	A	B		F	C
Approach Delay (s)	1.3	3.2		142.6	22.8
Approach LOS				F	C

Intersection Summary			
Average Delay	14.2		
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
351: W Wishkah St & S Thornton Street

9/10/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	561	45	107	539	10	113	1	263	9	2	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	610	49	116	586	11	123	1	286	10	2	9
Pedestrians		1			2			3			1	
Lane Width (ft)		14.0			14.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	598			662			1486	1487	639	1743	1506	593
vC1, stage 1 conf vol							657	657		825	825	
vC2, stage 2 conf vol							829	830		918	681	
vCu, unblocked vol	598			662			1486	1487	639	1743	1506	593
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.3
tC, 2 stage (s)							6.1	5.5		6.2	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.1	3.4
p0 queue free %	99			88			53	100	40	59	99	98
cM capacity (veh/h)	964			934			259	279	477	24	247	497

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	10	659	116	597	410	21
Volume Left	10	0	116	0	123	10
Volume Right	0	49	0	11	286	9
cSH	964	1700	934	1700	381	47
Volume to Capacity	0.01	0.39	0.12	0.35	1.08	0.44
Queue Length 95th (ft)	1	0	11	0	359	40
Control Delay (s)	8.8	0.0	9.4	0.0	101.6	131.7
Lane LOS	A		A		F	F
Approach Delay (s)	0.1		1.5		101.6	131.7
Approach LOS					F	F

Intersection Summary			
Average Delay	25.1		
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
352: W Wishkah St & Williams Street

9/10/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	564	46	106	534	1	114	0	264	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	613	50	115	580	1	124	0	287	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	582			663			1452	1452	638	1714	1477	581
vC1, stage 1 conf vol							640	640		811	811	
vC2, stage 2 conf vol							812	812		902	665	
vCu, unblocked vol	582			663			1452	1452	638	1714	1477	581
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			88			55	100	40	96	100	100
cM capacity (veh/h)	978			935			277	290	480	26	259	514

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	1	663	115	582	411	2
Volume Left	1	0	115	0	124	1
Volume Right	0	50	0	1	287	1
cSH	978	1700	935	1700	393	49
Volume to Capacity	0.00	0.39	0.12	0.34	1.05	0.04
Queue Length 95th (ft)	0	0	10	0	339	3
Control Delay (s)	8.7	0.0	9.4	0.0	90.7	81.3
Lane LOS	A		A		F	F
Approach Delay (s)	0.0		1.6		90.7	81.3
Approach LOS					F	F

Intersection Summary			
Average Delay	21.7		
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
429: Simpson Avenue #1012 & 6th Street

9/10/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	928	16	0	0	0	0	0	29	294	429	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	1.00	
Satd. Flow (prot)		2887							1289	1681	1424	
Flt Permitted		1.00							1.00	0.95	1.00	
Satd. Flow (perm)		2887							1289	1681	1424	
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)	0	977	17	0	0	0	0	0	31	309	452	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	29	70	4	0
Lane Group Flow (vph)	0	992	0	0	0	0	0	0	2	208	479	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		26.7							4.1	25.7	25.7	
Effective Green, g (s)		27.2							4.6	26.2	26.2	
Actuated g/C Ratio		0.39							0.07	0.37	0.37	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1122							85	629	533	
v/s Ratio Prot		c0.34							c0.00	0.12	c0.34	
v/s Ratio Perm												
v/c Ratio		0.88							0.02	0.33	0.90	
Uniform Delay, d1		19.9							30.6	15.6	20.7	
Progression Factor		0.75							1.00	1.00	1.00	
Incremental Delay, d2		9.4							0.5	1.4	20.7	
Delay (s)		24.4							31.1	17.0	41.3	
Level of Service		C							C	B	D	
Approach Delay (s)		24.4			0.0			31.1			32.5	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
429: Simpson Avenue #1012 & 6th Street

9/10/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	928	16	0	0	0	0	0	29	294	429	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0							4.0	4.0	4.0	
Lane Util. Factor		0.95							1.00	0.95	0.95	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	1.00	
Satd. Flow (prot)		2887							1289	1681	1424	
Flt Permitted		1.00							1.00	0.95	1.00	
Satd. Flow (perm)		2887							1289	1681	1424	
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)	0	977	17	0	0	0	0	0	31	309	452	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	29	70	4	0
Lane Group Flow (vph)	0	992	0	0	0	0	0	0	2	208	479	0
Heavy Vehicles (%)	2%	6%	6%	2%	2%	2%	2%	2%	2%	2%	1%	2%
Parking (#/hr)		40							20		20	
Turn Type									custom	Split		
Protected Phases		6							8	7	7	
Permitted Phases												
Actuated Green, G (s)		26.7							4.1	25.7	25.7	
Effective Green, g (s)		27.2							4.6	26.2	26.2	
Actuated g/C Ratio		0.39							0.07	0.37	0.37	
Clearance Time (s)		4.5							4.5	4.5	4.5	
Vehicle Extension (s)		3.0							3.0	3.0	3.0	
Lane Grp Cap (vph)		1122							85	629	533	
v/s Ratio Prot		c0.34							c0.00	0.12	c0.34	
v/s Ratio Perm												
v/c Ratio		0.88							0.02	0.33	0.90	
Uniform Delay, d1		19.9							30.6	15.6	20.7	
Progression Factor		0.77							1.00	1.00	1.00	
Incremental Delay, d2		9.4							0.5	1.4	20.7	
Delay (s)		24.7							31.1	17.0	41.3	
Level of Service		C							C	B	D	
Approach Delay (s)		24.7			0.0			31.1			32.5	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	28.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			