ATTACHMENT A

Intersection LOS Tables, Reports, and Synchro Files (on CD)

10/7/2009 ReadMe for Pontoon Construction Project LOS Result Files

File Naming Convention (for all files, EXCEPT Existing and No Build conditions)

Anderson and Middleton Alternative files:

LOS Report_(site alternative)_Build(year)_101(-alternate truck route, only where applicable)_(facilities not used, only where applicable).PDF

site alternative = A&M
year = 2011 or 2012.
alternate truck route = Port Industrial Road (PIR), State St.
facilities not used = Wastewater Treatment Plant and Lagoon (Lagoon) in 2011; Concrete Technology Corporation (CTC) Facility in 2012.

Aberdeen Log Yard Alternative files:

LOS Report_(site alternative)_(site access option)_Build(year)_101(-alternate truck route, only where applicable)_(facilities not used, only where applicable).PDF

site alternative = ALY
year = 2011 or 2012.
site access options = Hood Street (Hood) option, Single site (Single) access option, Thornton Street (Thorn) option, or Williams Street (Will) option.
alternate truck route = State St
facilities not used = Wastewater Treatment Plant and Lagoon (Lagoon) in 2011; Concrete Technology Corporation (CTC) Facility in 2012.

Mitigation files:

File name includes mitigation scenario after LOS Report_ and mitigation results to be paired with the LOS Table.

Please contact CJ Clavero/WSDOT for Synchro files.
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Pontoon Construction Project
Aberdeen Log Yard - Existing, 2011 No Build and Build - Pontoon Site Construction
Analysis Scenarios & Intersections for Each Scenario

| | | | | | | | Scenario: | Build Year 2011 (Construction Effects) - ALY Site | | | | | | |

Pontoon Construction Project

Aberdeen Log Yard - Existing, 2012/2013 No Build and Build - Pontoon Construction Operations

Analysis Scenarios & Intersections for Each Scenario

							Scenario:	Build Year 2012/2013 (Operations Effects) - ALY Site																					
							Worker Access:	Worker Access: Shared with Truck Access					Worker Access: Thornton Street (Exhibit 2)				Worker Access: Hood Street (Exhibit 1)				Worker Access: Williams Street (Exhibit 5)			
							Related Sites:	CTC Facility used		CTC Facility **not** used			CTC Facility used		CTC Facility **not** used		CTC Facility used		CTC Facility **not** used		CTC Facility used		CTC Facility **not** used	
	Traffic Control	Existing Conditions		Year 2012/2013 No Build			Alternate Truck Route(s):	none																			
Intersection		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	Δ delay		LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay
W Heron Street/US 101 (S Park Street)	S	B	11	B	12	1		C	20	8	B	19	7																
US 101 (W Heron Street)/S Alder Street	S	A	7	A	7	0		A	8	1	A	8	1																
US 101 (W Heron Street)/S L Street	S	B	18	B	20	1		C	20	1	C	20	0																
US 101 (W Heron Street)/S K Street	S	A	6	A	6	0		A	6	0	A	6	-1																
US 101 (W Heron Street)/S Broadway Street	S	B	11	B	12	1		B	12	0	B	12	0																
US 101 (W Heron Street)/S I Street	S	A	3	A	3	0		A	3	0	A	3	0																
US 101 (W Wishkah Street)/S I Street	S	A	5	A	6	0		A	6	0	A	5	0																
US 101 (W Wishkah Street)/S Broadway Street	S	A	6	A	6	0		A	7	0	A	7	0																
US 101 (W Wishkah Street)/S K Street	S	A	4	A	4	0		A	4	0	A	4	0																
US 101 (W Wishkah Street)/S L Street	S	A	9	A	10	0		A	10	0	A	10	1																
US 101 (W Wishkah Street)/S Alder Street	S	A	5	A	6	0		A	7	1	A	7	2																
W Wishkah Street/US 101 (S Park Street)	S	B	14	B	15	1		B	17	2	B	19	4																
US 101 (E Heron Street)/S H Street	S	B	20	C	21	2		C	23	1	C	23	1																
US 101/US 12 (E Heron Street)/S G Street	S	B	19	C	23	4		C	30	7	C	31	8																
US 101 (E Wishkah Street)/S H Street	S	A	8	A	8	0		A	8	0	A	8	0																
US 101/US 12 (E Wishkah Street)/S G Street	S	B	15	B	14	0		B	14	0	B	14	0																
US 12 (E Wishkah Street)/S Chehalis Street	S	C	20	C	22	2		C	24	2	C	24	2																
US 12 (E Wishkah Street)/Tyler Street/Mall Access	S	C	22	C	26	4		C	30	4	C	30	4																
US 101 (S G Street)/SR 105 (S Boone Street)	S	B	12	B	14	2		B	15	0	B	15	1																
W State Street/L Street	U	A	1	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
W State Street/M Street	U	A	1	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
W State Street/Alder Street	U	A	1	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
W State Street/Park Street	U	A	7	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Port Industrial Road/E Terminal Way	U	A	0	A	0	0		A	0	0	A	0	0																
W Wishkah Street/S Thornton Street	U	A	1	A	1	0		A	1	0	A	1	0	F	117	116	F	205	204	A	1	0	A	1	0	A	1	0	A	1	0
W Wishkah Street/Williams Street	U	A	0	A	0	0		A	0	0	A	0	0	A	0	0	A	0	0	A	0	0	A	0	0	F	103	102	F	180	180
W Wishkah Street/S Division Street	U	A	2	A	2	0		E	40	38	F	83	81	A	3	1	A	3	1	F	144	142	F	>300	>300	A	3	1	A	3	1
W Wishkah Street/S Garfield Street	U	A	0	A	0	0		A	0	0	A	0	0	A	0	0	A	0	0	A	0	0	A	0	0	A	0	0	A	0	0
W Heron Street/S Garfield Street	U	A	9	A	9	0		F	184	175	F	185	176	B	14	4	B	14	5	B	14	4	B	14	5	B	14	4	B	14	5
W Heron Street/S Monroe Street	U	A	5	A	6	1		A	9	3	A	9	3																
W Heron Street/S Lincoln Street	U	A	1	A	1	0		A	1	0	A	1	0																
W Heron Street/S Washington Street	U	A	3	A	4	0		A	5	1	A	5	1																
W Wishkah Street/S Washington Street	U	A	3	A	3	0		A	3	0	A	3	0																
W Wishkah Street/S Lincoln Street	U	A	1	A	1	0		A	1	0	A	1	0																
W Wishkah Street/S Monroe Street	U	A	4	A	4	0		A	4	0	A	4	0																
W Heron Street/S Division Street	U	A	1	A	1	0		A	10	9	A	9	9	A	1	0	A	1	0	A	1	0	A	1	0	A	1	0	A	1	0
S Division Street/Hood Street	U	A	1	A	0	0		A	0	0	A	0	0	A	0	0	A	0	0	A	8	8	A	8	7	A	0	0	A	0	0
Port Industrial Road/W 1st Street	U	A	2	A	2	0		A	2	0	A	2	0																
Port Industrial Road/Myrtle Street	U	A	3	A	4	1		A	5	1	A	6	2																
Bay Avenue/23rd Street	U	A	1	A	2	0		A	1	0	A	1	0																
5th Avenue/Earley Industrial Way	U	A	9	A	9	0		A	9	0	A	9	0																
Earley Industrial Way/West Access	U	A	0	A	0	0		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Earley Industrial Way/East Access	U	A	0	A	0	0		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SR 109 (Emerson Avenue)/S Adams Street	S	A	4	A	4	0		A	5	0	A	5	0																
SR 109 (Emerson Avenue)/Paulson Road	U	A	1	A	1	0		A	1	0	A	1	0																
US 101 (N Park Street)/W Market Street	S	A	6	A	6	0		A	6	0	A	6	0																
US 101 (W Simpson Avenue)/Myrtle Street	S	B	11	B	13	2		B	13	0	B	13	0																
US 101 (W Simpson Avenue)/30th Street	S	A	4	A	5	0		A	5	0	A	5	0																
US 101 (W Simpson Avenue)/Ontario Street	U	A	4	A	5	1		A	5	0	A	5	0																
US 101 (W Simpson Avenue)/23rd Street	S	A	8	A	8	0		A	9	1	A	9	1																
US 101 (W Simpson Avenue)/8th Street	S	A	7	A	7	0		A	7	0	A	7	0																
US 101 (W Simpson Avenue)/7th Street	S	A	4	A	4	0		A	4	0	A	5	0																
US 101 (W Simpson Avenue)/6th Street	S	C	24	C	26	2		C	27	1	C	28	2																
US 101 (W Simpson Avenue)/5th Street	S	B	19	B	19	1		B	19	0	B	19	0																
SR 109 (Emerson Avenue)/US 101 (W Simpson Avenue)	S	A	2	A	2	0		A	2	0	A	2	0																
US 101 (N Alder Street)/W Market Street	S	B	13	B	14	1		B	14	0	B	14	0																
US 101 (N Alder Street)/W 1st Street	S	B	17	B	20	3		B	20	0	B	20	0																
US 101 (Sumner Avenue)/Oak Street	S	B	9	B	10	1		B	10	0	B	10	0																
US 101 (W Sumner Avenue)/30th Street	S	A	3	A	3	0		A	3	0	A	3	0																
US 101 (W Sumner Avenue)/Ontario Street	U	A	2	A	3	0		A	3	0	A	3	0																
US 101 (W Sumner Avenue)/23rd Street	S	B	12	B	13	1		B	14	1	B	14	1																
US 101 (Riverside Avenue)/16th Street	U	A	1	A	1	0		A	1	0	A	1	0																
US 101 (Levee Street)/6th Street	U	A	5	A	9	4		B	11	2	B	11	2																
US 101 (Lincoln Street)/5th Street	S	A	5	A	5	0		A	5	0	A	5	0																
US 101 (Lincoln Street)/SR 109 (Emerson Avenue)	S	A	6	A	7	1		A	7	1	A	7	1																

Notes:

Traffic operations information in this table was summarized from HCM Reports produced by Synchro 7, Build 763.

Δ delay columns, give the change in delay between two scenarios. It gives the comparison between No Build Alternatives and Existing conditions, and between Build conditions and No Build conditions for site operations (2012/2013).

For the Aberdeen Log Yard Alternative, intersection LOS and delays are similar for all of the site access options for most of the study intersections, and therefore are shown on the table with gray shading.

The 2012/2013 analysis assumes an on-site batch plant for the Aberdeen Log Yard Alternative.

Pontoon Construction Project

Anderson & Middleton - Existing, 2012/2013 No Build and Build - Pontoon Construction Operations

Analysis Scenarios & Intersections for Each Scenario

							Scenario:	**Build Year 2012/2013 (Operations Effects) - A&M Site with Potential Mitigation**										
							Worker Access:	One Scenario										
							Related Sites:	CTC Facility used					CTC Facility **not** used					
	Traffic Control	Existing Conditions		Year 2012/2013 No Build			Alternate Truck Route(s):	none			Bay Avenue/ Port Industrial Road & Wishkah St/Heron St			none			Bay Avenue/ Port Industrial Road & Wishkah St/Heron St	
Intersection		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	Δ delay		LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay
US 101 (W Simpson Avenue)/6th Street	S	C	24	C	26	2		n/a	n/a	n/a	n/a	n/a	n/a	C	28	2	C	28	2

US 101 (W Simpson Ave)/6th St intersection is mitigated with signal timing improvements.

Pontoon Construction Project

Anderson & Middleton - Existing, 2011 No Build and Build - Pontoon Site Construction

Analysis Scenarios & Intersections for Each Scenario

							Scenario:	Build Year 2011 (Construction Effects) - A&M Site																						
							Worker Access:	One Scenario																						
							Related Sites:	Hoquiam Wastewater Treatment Plant's Lagoon used for Excavated Material Disposal											Hoquiam Wastewater Treament Plant's Lagoon **not** used for Excavated Material Disposal											
	Traffic Control	Existing Conditions		Year 2011 No Build			Alternate Truck Route(s):	none			Bay Avenue/ Port Industrial Road & Wishkah St/Heron St			Bay Avenue/ Port Industrial Road/ Wishkah St/Heron St & State Street			State Street			none			Bay Avenue/ Port Industrial Road & Wishkah St/Heron St			Bay Avenue/ Port Industrial Road/ Wishkah St/Heron St & State Street			State Street		
Intersection		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	Δ delay		LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay
W Heron Street/US 101 (S Park Street)	S	B	11	B	12	1		B	12	0	B	17	6	B	13	1	B	12	0	B	12	0	C	23	11	B	13	1	B	13	1
US 101 (W Heron Street)/S Alder Street	S	A	7	A	7	0		A	7	0	A	7	0	B	11	4	B	11	4	A	7	0	A	7	1	B	12	6	B	13	6
US 101 (W Heron Street)/S L Street	S	B	18	B	19	1		C	20	1	C	20	1	B	19	-1	B	18	-1	C	20	1	C	20	1	B	18	-2	B	17	-2
US 101 (W Heron Street)/S K Street	S	A	6	A	6	0		A	6	0	A	6	0	A	6	0	A	6	0	A	6	0	A	6	0	A	6	0	A	6	0
US 101 (W Heron Street)/S Broadway Street	S	B	11	B	12	1		B	12	0	B	12	0	B	12	-1	B	12	-1	B	13	1	B	13	1	B	11	-1	B	11	-1
US 101 (W Heron Street)/S I Street	S	A	3	A	3	0		A	3	0	A	3	0	A	3	0	A	3	0	A	3	0	A	3	0	A	3	0	A	3	0
US 101 (W Wishkah Street)/S I Street	S	A	5	A	5	0		A	5	0	A	5	0	A	5	0	A	5	0	A	5	0	A	5	0	A	5	0	A	5	0
US 101 (W Wishkah Street)/S Broadway Street	S	A	6	A	6	0		A	6	0	A	6	0	A	6	0	A	6	0	A	6	0	A	6	0	A	6	0	A	6	0
US 101 (W Wishkah Street)/S K Street	S	A	4	A	4	0		A	4	0	A	4	0	A	4	0	A	4	0	A	4	0	A	4	0	A	4	0	A	4	0
US 101 (W Wishkah Street)/S L Street	S	A	9	A	10	0		A	10	0	A	10	0	A	10	0	A	10	0	A	10	0	A	10	0	A	10	0	A	10	0
US 101 (W Wishkah Street)/S Alder Street	S	A	5	A	6	0		A	8	3	A	7	2	A	9	4	A	9	3	B	10	5	A	8	2	B	13	7	B	10	5
W Wishkah Street/US 101 (S Park Street)	S	B	14	B	15	0		B	19	4	B	20	5	B	19	4	B	19	4	C	23	8	C	22	7	C	21	6	C	23	8
US 101 (E Heron Street)/S H Street	S	B	20	C	21	1		C	22	1	C	22	1	C	22	1	C	22	1	C	23	3	C	23	3	C	22	1	C	22	1
US 101/US 12 (E Heron Street)/S G Street	S	B	19	C	22	3		D	35	14	D	35	14	C	24	3	C	24	3	D	45	23	D	45	23	C	24	3	C	24	3
US 101 (E Wishkah Street)/S H Street	S	A	8	A	8	0		A	8	0	A	8	0	A	8	0	A	8	0	A	9	1	A	9	1	A	8	0	A	8	0
US 101/US 12 (E Wishkah Street)/S G Street	S	B	15	B	14	0		B	15	0	B	15	0	B	14	0	B	14	0	B	15	0	B	15	0	B	14	0	B	14	0
US 12 (E Wishkah Street)/S Chehalis Street	S	C	20	C	22	2		C	22	1	C	22	1	C	22	1	C	22	1	C	22	1	C	22	1	C	22	1	C	22	1
US 12 (E Wishkah Street)/Tyler Street/Mall Access	S	C	22	C	25	3		C	26	2	C	26	2	C	26	2	C	26	2	C	26	2	C	26	2	C	26	2	C	26	2
US 101 (S G Street)/SR 105 (S Boone Street)	S	B	12	B	14	1		B	20	6	B	20	6	B	20	6	B	20	6	C	23	9	C	23	9	C	23	9	C	23	9
W State Street/L Street	U	A	1	A	1	0		n/a	n/a	n/a	n/a	n/a	n/a	A	1	0	A	1	0	n/a	n/a	n/a	n/a	n/a	n/a	A	1	0	A	1	0
W State Street/M Street	U	A	1	A	1	0		n/a	n/a	n/a	n/a	n/a	n/a	A	1	0	A	1	0	n/a	n/a	n/a	n/a	n/a	n/a	A	1	0	A	1	0
W State Street/Alder Street	U	A	1	A	1	0		n/a	n/a	n/a	n/a	n/a	n/a	A	1	0	A	1	0	n/a	n/a	n/a	n/a	n/a	n/a	A	1	0	A	1	0
W State Street/Park Street	U	A	7	A	7	1		n/a	n/a	n/a	n/a	n/a	n/a	A	8	1	A	8	1	n/a	n/a	n/a	n/a	n/a	n/a	A	8	1	A	8	1
Port Industrial Road/E Terminal Way	U	A	0	A	0	0		A	0	0	A	0	0	A	0	0	A	0	0	A	0	0	A	0	0	A	0	0	A	0	0
W Wishkah Street/S Thornton Street	U	A	1	A	1	0		A	1	0	A	1	0	A	1	0	A	1	0	A	1	0	A	1	0	A	1	0	A	1	0
W Wishkah Street/Williams Street	U	A	0	A	0	0		A	0	0	A	0	0	A	0	0	A	0	0	A	0	0	A	0	0	A	0	0	A	0	0
W Wishkah Street/S Division Street	U	A	2	A	2	0		A	2	0	A	2	0	A	2	0	A	2	0	A	2	0	A	3	1	A	3	1	A	2	0
W Wishkah Street/S Garfield Street	U	A	0	A	0	0		A	0	0	A	0	0	A	0	0	A	0	0	A	0	0	A	0	0	A	0	0	A	0	0
W Heron Street/S Garfield Street	U	A	9	A	9	0		A	9	0	B	10	1	B	10	1	A	9	0	A	9	0	B	11	2	B	11	2	A	9	0
W Heron Street/S Monroe Street	U	A	5	A	6	1		A	6	0	A	7	1	A	7	1	A	6	0	A	6	0	A	7	1	A	7	1	A	6	0
W Heron Street/S Lincoln Street	**U**	**A**	**1**	**A**	**1**	**0**		**A**	**1**	**0**	**A**	**1**	**0**	**A**	**1**	**0**	**A**	**1**	**0**	**A**	**1**	**0**	**A**	**1**	**0**	**A**	**1**	**0**	**A**	**1**	**0**
W Heron Street/S Washington Street	U	A	3	A	4	0		A	4	0	A	4	0	A	4	0	A	4	0	A	4	0	A	4	0	A	4	0	A	4	0
W Wishkah Street/S Washington Street	U	A	3	A	3	0		A	3	0	A	2	-1	A	2	-1	A	3	0	A	3	0	A	2	-1	A	2	-1	A	3	0
W Wishkah Street/S Lincoln Street	U	A	1	A	1	0		A	1	0	A	1	0	A	1	0	A	1	0	A	1	0	A	1	0	A	1	0	A	1	0
W Wishkah Street/S Monroe Street	U	A	4	A	4	0		A	4	0	A	4	0	A	4	0	A	4	0	A	4	0	A	4	0	A	4	0	A	4	0
W Heron Street/S Division Street	U	A	1	A	1	0		A	1	0	A	1	0	A	1	0	A	1	0	A	1	0	A	1	0	A	1	0	A	1	0
S Division Street/Hood Street	U	A	1	A	0	0		A	0	0	A	0	0	A	0	0	A	0	0	A	0	0	A	0	0	A	0	0	A	0	0
Port Industrial Road/W 1st Street	U	A	2	A	2	0		A	2	0	A	2	0	A	2	0	A	2	0	A	2	0	A	2	0	A	2	0	A	2	0
Port Industrial Road/Myrtle Street	U	A	3	A	4	0		A	4	0	A	5	1	A	5	1	A	4	0	A	4	0	A	6	2	A	6	2	A	4	0
Bay Avenue/23rd Street	U	A	1	A	2	0		A	2	0	A	1	0	A	1	0	A	2	0	A	2	0	A	1	0	A	1	0	A	2	0
5th Avenue/Earley Industrial Way	U	A	9	A	9	0		B	11	2	B	11	2	B	11	2	B	11	2	B	11	2	B	11	2	B	11	2	B	11	2
Earley Industrial Way/West Access	U	A	0	A	0	0		A	8	8	A	8	8	A	8	8	A	8	8	A	8	8	A	8	8	A	8	8	A	8	8
Earley Industrial Way/East Access	U	A	0	A	0	0		A	5	5	A	5	5	A	5	5	A	5	5	A	5	5	A	5	5	A	5	5	A	5	5
SR 109 (Emerson Avenue)/S Adams Street	S	A	4	A	4	0		A	6	1	A	6	1	A	6	1	A	6	1	A	6	2	A	6	2	A	6	2	A	6	2
SR 109 (Emerson Avenue)/Paulson Road	U	A	1	A	1	0		A	4	4	A	4	4	A	4	4	A	4	4	A	6	5	A	6	5	A	6	5	A	6	5
US 101 (N Park Street)/W Market Street	S	A	6	A	6	0		A	7	1	A	6	0	A	6	0	A	7	1	A	7	1	A	6	0	A	6	0	A	7	1
US 101 (W Simpson Avenue)/Myrtle Street	S	B	11	B	12	1		B	18	6	B	14	2	B	14	2	B	18	6	C	20	8	B	14	2	B	14	2	C	20	8
US 101 (W Simpson Avenue)/30th Street	S	A	4	A	5	0		A	5	1	A	5	0	A	5	0	A	5	1	A	5	1	A	5	0	A	5	0	A	5	1
US 101 (W Simpson Avenue)/Ontario Street	U	A	4	A	5	1		A	8	3	A	6	1	A	6	1	A	8	3	A	9	4	A	6	1	A	6	1	A	9	4
US 101 (W Simpson Avenue)/23rd Street	S	A	8	A	8	0		A	10	2	B	11	3	B	11	3	A	10	2	B	10	2	B	12	4	B	12	4	B	10	2
US 101 (W Simpson Avenue)/8th Street	S	A	7	A	7	0		B	10	3	B	10	3	B	10	3	B	10	3	B	11	4	B	11	4	B	11	4	B	11	4
US 101 (W Simpson Avenue)/7th Street	S	A	4	A	4	0		A	5	0	A	5	0	A	5	0	A	5	0	A	5	1	A	5	1	A	5	1	A	5	1
US 101 (W Simpson Avenue)/6th Street	S	C	24	C	25	1		C	33	8	C	33	8	C	33	8	C	33	8	D	42	16	D	42	16	D	42	16	D	42	16
US 101 (W Simpson Avenue)/5th Street	S	B	19	B	19	0		C	21	2	C	21	2	C	21	2	C	21	2	C	22	3	C	22	3	C	22	3	C	22	3
SR 109 (Emerson Avenue)/US 101 (W Simpson Avenue)	S	A	2	A	2	0		A	2	0	A	2	0	A	2	0	A	2	0	A	2	0	A	2	0	A	2	0	A	2	0
US 101 (N Alder Street)/W Market Street	S	B	13	B	13	0		B	14	0	B	14	0	B	13	-1	B	13	-1	B	14	1	B	14	0	B	13	-1	B	13	-1
US 101 (N Alder Street)/W 1st Street	S	B	17	B	19	2		B	20	1	B	19	0	B	19	0	B	20	1	C	20	2	B	19	0	B	19	0	C	20	2
US 101 (Sumner Avenue)/Oak Street	S	B	9	B	10	1		B	11	1	B	10	0	B	10	0	B	11	1	B	12	2	B	10	0	B	10	0	B	12	2
US 101 (W Sumner Avenue)/30th Street	S	A	3	A	3	0		A	4	1	A	3	0	A	3	0	A	4	1	A	4	1	A	3	0	A	3	0	A	4	1
US 101 (W Sumner Avenue)/Ontario Street	U	A	2	A	3	0		A	3	1	A	3	0	A	3	0	A	3	1	A	3	1	A	3	0	A	3	0	A	3	1
US 101 (W Sumner Avenue)/23rd Street	S	B	12	B	12	1		B	14	1	B	15	2	B	15	2	B	14	1	B	14	2	B	16	3	B	16	3	B	14	2
US 101 (Riverside Avenue)/16th Street	U	A	1	A	1	0		A	1	0	A	1	0	A	1	0	A	1	0	A	1	0	A	1	0	A	1	0	A	1	0
US 101 (Levee Street)/6th Street	U	A	5	A	8	2		B	11	3	B	11	3	B	11	3	B	11	3	B	12	5	B	12	5	B	12	5	B	12	5
US 101 (Lincoln Street)/5th Street	S	A	5	A	5	0		A	7	2	A	7	2	A	7	2	A	7	2	A	7	2	A	7	2	A	7	2	A	7	2
US 101 (Lincoln Street)/SR 109 (Emerson Avenue)	S	A	6	A	6	1		B	12	5	B	12	5	B	12	5	B	12	5	B	18	12	B	18	12	B	18	12	B	18	12

Notes:

Traffic operations information in this table was summarized from HCM Reports produced by Synchro 7, Build 763.

Δ delay columns, give the change in delay between two scenarios. It gives the comparison between No Build Alternatives and Existing conditions, and between Build conditions and No Build conditions for site construction (20

Pontoon Construction Project

Aberdeen Log Yard - Existing, 2011 No Build and Build - Pontoon Site Construction

Analysis Scenarios & Intersections for Each Scenario

							Scenario:	**Build Year 2011 (Construction Effects) - ALY Site with Potential Mitigation**																				
							Worker Access:	Worker Access: **Shared w/Truck Access, Thornton Street or Williams Street**												Worker Access: Hood Street (Exhibit 1)								
							Related Sites:	Hoquiam Wastewater Treatment Plant's Lagoon used for Excavated Material Disposal						Hoquiam Wastewater Treatment Plant's Lagoon **not** used for Excavated Material Disposal						Hoquiam Wastewater Treatment Plant's Lagoon used for Excavated Material Disposal						Hoquiam Wastewater Treatment Plant's Lagoon **not** used for Excavated Material Disposal					
	Traffic Control	Existing Conditions		Year 2011 No Build			Alternate Truck Route(s):	none			State Street			none			State Street			none			State Street			none			State Street		
Intersection		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	Δ delay		LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay
W Wishkah Street/S Division Street [1]	U	A	2	A	2	0		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	D	28	**26**	D	28	**26**	D	28	**26**	D	28	**26**
W Wishkah Street/S Division Street [2]	U	A	2	A	2	0		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	B	19	**17**	B	19	**17**	B	19	**17**	B	19	**17**
W Heron Street/S Garfield Street	U	A	9	A	9	0		A	0	***-9***	A	0	***-9***	A	0	***-9***	A	0	***-9***	A	0	***-9***	A	0	***-9***	A	0	***-9***	A	0	***-9***

[1] W Wishkah St/S Division St intersection is mitigated by having the northbound right-turn employee trips rerouted to the Heron/Garfield intersection.

[2] W Wishkah St/S Division St intersection is mitigated by being restriped.

Pontoon Construction Project

Anderson & Middleton - Existing, 2012/2013 No Build and Build - Pontoon Construction Operations

Analysis Scenarios & Intersections for Each Scenario

							Scenario:	Build Year 2012/2013 (Operations Effects) - A&M Site											
							Worker Access:	One Scenario											
							Related Sites:	CTC Facility used						CTC Facility **not** used					
	Traffic Control	Existing Conditions		Year 2012/2013 No Build			Alternate Truck Route(s):	none			Bay Avenue/ Port Industrial Road & Wishkah St/Heron St			none			Bay Avenue/ Port Industrial Road & Wishkah St/Heron St		
Intersection		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	Δ delay		LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay
W Heron Street/US 101 (S Park Street)	S	B	11	B	12	1		B	11	***-1***	B	12	0	B	11	***-1***	B	12	0
US 101 (W Heron Street)/S Alder Street	S	A	7	A	7	0		A	7	0	A	7	0	A	7	0	A	7	0
US 101 (W Heron Street)/S L Street	S	B	18	B	20	1		C	20	1	C	20	1	C	20	1	C	20	1
US 101 (W Heron Street)/S K Street	S	A	6	A	6	0		A	6	0	A	6	0	A	6	0	A	6	0
US 101 (W Heron Street)/S Broadway Street	S	B	11	B	12	1		B	12	0	B	12	0	B	12	0	B	12	0
US 101 (W Heron Street)/S I Street	S	A	3	A	3	0		A	3	0	A	3	0	A	3	0	A	3	0
US 101 (W Wishkah Street)/S I Street	S	A	5	A	6	0		A	6	0	A	6	0	A	5	0	A	5	0
US 101 (W Wishkah Street)/S Broadway Street	S	A	6	A	6	0		A	6	0	A	6	0	A	6	0	A	6	0
US 101 (W Wishkah Street)/S K Street	S	A	4	A	4	0		A	4	0	A	4	0	A	4	0	A	4	0
US 101 (W Wishkah Street)/S L Street	S	A	9	A	10	0		A	10	0	A	10	0	A	10	0	A	10	0
US 101 (W Wishkah Street)/S Alder Street	S	A	5	A	6	0		A	7	1	A	7	1	A	8	2	A	8	2
W Wishkah Street/US 101 (S Park Street)	S	B	14	B	15	1		B	17	2	B	17	2	B	17	2	B	17	2
US 101 (E Heron Street)/S H Street	S	B	20	C	21	2		C	23	2	C	23	2	C	23	2	C	23	2
US 101/US 12 (E Heron Street)/S G Street	S	B	19	C	23	4		C	30	7	C	30	7	C	31	8	C	31	8
US 101 (E Wishkah Street)/S H Street	S	A	8	A	8	0		A	8	0	A	8	0	A	8	0	A	8	0
US 101/US 12 (E Wishkah Street)/S G Street	S	B	15	B	14	0		B	14	0	B	14	0	B	14	0	B	14	0
US 12 (E Wishkah Street)/S Chehalis Street	S	C	20	C	22	2		C	24	2	C	24	2	C	24	2	C	24	2
US 12 (E Wishkah Street)/Tyler Street/Mall Access	S	C	22	C	26	4		C	30	4	C	30	4	C	30	4	C	30	4
US 101 (S G Street)/SR 105 (S Boone Street)	S	B	12	B	14	2		B	15	0	B	15	0	B	15	1	B	15	1
W State Street/L Street	U	A	1	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
W State Street/M Street	U	A	1	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
W State Street/Alder Street	U	A	1	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
W State Street/Park Street	U	A	7	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Port Industrial Road/E Terminal Way	U	A	0	A	0	0		A	0	0	A	0	0	A	0	0	A	0	0
W Wishkah Street/S Thornton Street	U	A	1	A	1	0		A	1	0	A	1	0	A	1	0	A	1	0
W Wishkah Street/Williams Street	U	A	0	A	0	0		A	0	0	A	0	0	A	0	0	A	0	0
W Wishkah Street/S Division Street	U	A	2	A	2	0		A	2	0	A	2	0	A	2	0	A	2	0
W Wishkah Street/S Garfield Street	U	A	0	A	0	0		A	0	0	A	0	0	A	0	0	A	0	0
W Heron Street/S Garfield Street	U	A	9	A	9	0		A	9	0	A	9	0	A	9	0	A	9	0
W Heron Street/S Monroe Street	U	A	5	A	6	1		A	6	0	A	6	0	A	6	0	A	6	0
W Heron Street/S Lincoln Street	U	A	1	A	1	0		A	1	0	A	1	0	A	1	0	A	1	0
W Heron Street/S Washington Street	U	A	3	A	4	0		A	4	0	A	4	0	A	4	0	A	4	0
W Wishkah Street/S Washington Street	U	A	3	A	3	0		A	3	0	A	3	0	A	3	0	A	3	0
W Wishkah Street/S Lincoln Street	U	A	1	A	1	0		A	1	0	A	1	0	A	1	0	A	1	0
W Wishkah Street/S Monroe Street	U	A	4	A	4	0		A	4	0	A	4	0	A	4	0	A	4	0
W Heron Street/S Division Street	U	A	1	A	1	0		A	1	0	A	1	0	A	1	0	A	1	0
S Division Street/Hood Street	U	A	1	A	0	0		A	0	0	A	0	0	A	0	0	A	0	0
Port Industrial Road/W 1st Street	U	A	2	A	2	0		A	2	0	A	2	0	A	2	0	A	2	0
Port Industrial Road/Myrtle Street	U	A	3	A	4	1		A	4	0	A	4	0	A	4	0	A	4	0
Bay Avenue/23rd Street	U	A	1	A	2	0		A	2	0	A	2	0	A	2	0	A	2	0
5th Avenue/Earley Industrial Way	U	A	9	A	9	0		A	9	0	A	9	0	B	10	1	B	10	1
Earley Industrial Way/West Access	U	A	0	A	0	0		A	9	9	A	9	9	A	10	10	A	10	10
Earley Industrial Way/East Access	U	A	0	A	0	0		A	5	5	A	5	5	A	5	5	A	5	5
SR 109 (Emerson Avenue)/S Adams Street	S	A	4	A	4	0		A	6	1	A	6	1	A	6	1	A	6	1
SR 109 (Emerson Avenue)/Paulson Road	U	A	1	A	1	0		A	1	0	A	1	0	A	1	0	A	1	0
US 101 (N Park Street)/W Market Street	S	A	6	A	6	0		A	6	0	A	6	0	A	6	0	A	6	0
US 101 (W Simpson Avenue)/Myrtle Street	S	B	11	B	13	2		B	17	4	B	17	4	B	17	5	B	17	5
US 101 (W Simpson Avenue)/30th Street	S	A	4	A	5	0		A	5	0	A	5	0	A	5	0	A	5	0
US 101 (W Simpson Avenue)/Ontario Street	U	A	4	A	5	1		A	9	4	A	9	4	A	9	5	A	9	5
US 101 (W Simpson Avenue)/23rd Street	S	A	8	A	8	0		A	10	1	A	10	1	A	10	1	A	10	1
US 101 (W Simpson Avenue)/8th Street	S	A	7	A	7	0		B	12	5	B	12	5	B	12	5	B	12	5
US 101 (W Simpson Avenue)/7th Street	S	A	4	A	4	0		A	5	0	A	5	0	A	5	0	A	5	0
US 101 (W Simpson Avenue)/6th Street	S	C	24	C	26	2		C	33	7	C	33	7	**E**	**61**	**35**	**E**	**61**	**35**
US 101 (W Simpson Avenue)/5th Street	S	B	19	B	19	1		C	21	1	C	21	1	C	21	1	C	21	1
SR 109 (Emerson Avenue)/US 101 (W Simpson Avenue)	S	A	2	A	2	0		A	2	0	A	2	0	A	2	0	A	2	0
US 101 (N Alder Street)/W Market Street	S	B	13	B	14	1		B	14	0	B	14	0	B	14	0	B	14	0
US 101 (N Alder Street)/W 1st Street	S	B	17	B	20	3		B	20	0	B	20	0	C	20	1	C	20	1
US 101 (Sumner Avenue)/Oak Street	S	B	9	B	10	1		B	11	1	B	11	1	B	12	2	B	12	1
US 101 (W Sumner Avenue)/30th Street	S	A	3	A	3	0		A	3	0	A	3	0	A	4	1	A	4	1
US 101 (W Sumner Avenue)/Ontario Street	U	A	2	A	3	0		A	4	1	A	4	1	A	4	2	A	4	2
US 101 (W Sumner Avenue)/23rd Street	S	B	12	B	13	1		B	14	1	B	14	1	B	14	1	B	14	2
US 101 (Riverside Avenue)/16th Street	U	A	1	A	1	0		A	1	0	A	1	0	A	1	0	A	1	0
US 101 (Levee Street)/6th Street	U	A	5	A	9	4		B	12	3	B	12	3	C	16	7	C	16	7
US 101 (Lincoln Street)/5th Street	S	A	5	A	5	0		A	6	1	A	6	1	A	6	1	A	6	1
US 101 (Lincoln Street)/SR 109 (Emerson Avenue)	S	A	6	A	7	1		A	7	0	A	7	0	A	7	1	A	7	1

Notes:

Traffic operations information in this table was summarized from HCM Reports produced by Synchro 7, Build 763.

Δ delay columns, give the change in delay between two scenarios. It gives the comparison between No Build Alternatives and Existing conditic

and between Build conditions and No Build conditions for site operations (2012/2013).

The 2012/2013 analysis assumes an on-site batch plant for the Anderson & Middleton Alternative.

Pontoon Construction Project

Aberdeen Log Yard - Existing, 2012/2013 No Build and Build - Pontoon Construction Operations

Analysis Scenarios & Intersections for Each Scenario

							Scenario:	Build Year 2012/2013 (Operations Effects) - ALY Site with Potential Mitigation																					
							Worker Access:	Worker Access: Shared with Truck Access						Worker Access: Thornton Street (Exhibit 2)						Worker Access: Hood Street (Exhibit 1)						Worker Access: Williams Street (Exhibit 5)					
							Related Sites:	CTC Facility used			CTC Facility **not** used			CTC Facility used			CTC Facility **not** used			CTC Facility used			CTC Facility **not** used			CTC Facility used			CTC Facility **not** used		
	Traffic Control	Existing Conditions		Year 2012/2013 No Build			Alternate Truck Route(s):	none																					
Intersection		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	Δ delay		LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay	LOS	Delay (sec/veh)	Δ delay
W Wishkah Street/S Thornton Street[1]	U	A	1	A	1	0		n/a	n/a	n/a	n/a	n/a	n/a	D	25	**25**	D	31	**30**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
W Wishkah Street/Williams Street[2]	U	A	0	A	0	0		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	C	22	**22**	B	12	**12**
W Wishkah Street/S Division Street[3]	U	A	2	A	2	0		A	6	4	B	14	**12**	n/a	n/a	n/a	n/a	n/a	n/a	A	6	4	B	14	**12**	n/a	n/a	n/a	n/a	n/a	n/a
W Heron Street/S Garfield Street[4]	U	A	9	A	9	0		A	0	***-9***	A	0	***-9***	n/a	n/a	n/a	n/a	n/a	n/a	A	0	***-9***	A	0	***-9***	n/a	n/a	n/a	n/a	n/a	n/a

[1] W Wishkah St/S Thornton St intersection mitigations is restriping if CTC facility is used; intersection mitigation is restriping and restricting left-turns out of site if CTC facility is not used.

[2] W Wishkah St/Williams St intersection mitigation is restriping if CTC facility is used; intersection mitigation is restriping and restricting left-turns out of site if CTC facility is not used.

[3] W Wishkah St/S Division St intersection is mitigated by **A**) restriping in the single (shared) access point option and by**B**) restriping and rerouting the northbound right-turns to Heron/Garfield in the Hood St site access option.

[4] W Heron St/S Garfield St intersection operations are mitigated by putting in a traffic island and rechannelizing (this is also needed for the Hood Street Option with the potential mitigation of rerouting the site-generated northbound right-turns from Wishkah/Division).

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)	892	205	0	0	0	20	0	312	123	0	0	0
Ideal Flow (vphpl)	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		0.96				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1662				1277		2562				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1662				1277		2562				
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)	959	220	0	0	0	22	0	335	132	0	0	0
RTOR Reduction (vph)	248	60	0	0	0	22	0	57	0	0	0	0
Lane Group Flow (vph)	337	534	0	0	0	0	0	410	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	13%	19%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	39.8	39.8				1.8		16.4				
Effective Green, g (s)	40.3	40.3				0.8		16.9				
Actuated g/C Ratio	0.58	0.58				0.01		0.24				
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)	932	957				15		619				
v/s Ratio Prot								c0.16				
v/s Ratio Perm	0.21	0.32				c0.00						
v/c Ratio	0.36	0.56				0.02		0.66				
Uniform Delay, d1	8.0	9.3				34.2		24.0				
Progression Factor	0.65	0.17				1.00		1.00				
Incremental Delay, d2	0.8	1.7				0.2		2.7				
Delay (s)	6.0	3.3				34.4		26.6				
Level of Service	A	A				C		C				
Approach Delay (s)		4.7			34.4			26.6			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.3%	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)	15	20	0	0	149	17	31	1200	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			4886				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1273			1631			4886				
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)	16	21	0	0	157	18	33	1263	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	37	0	0	166	0	0	1302	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	16%	5%	5%	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)		12.5			12.5			48.5				
Effective Green, g (s)		13.0			13.0			49.0				
Actuated g/C Ratio		0.19			0.19			0.70				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		236			303			3420				
v/s Ratio Prot					c0.10							
v/s Ratio Perm		0.03						0.27				
v/c Ratio		0.16			0.55			0.38				
Uniform Delay, d1		23.9			25.8			4.3				
Progression Factor		1.06			1.00			0.69				
Incremental Delay, d2		0.3			2.0			0.3				
Delay (s)		25.7			27.9			3.2				
Level of Service		C			C			A				
Approach Delay (s)		25.7			27.9			3.2			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.0%	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

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	85	136	0	0	77	107	49	1271	79	0	0	0
Ideal Flow (vphpl)	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			1711	1504		4521				
Flt Permitted		0.84			1.00	1.00		1.00				
Satd. Flow (perm)		1247			1711	1504		4521				
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)	89	143	0	0	81	113	52	1338	83	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	40	0	8	0	0	0	0
Lane Group Flow (vph)	0	232	0	0	88	50	0	1465	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	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)		16.7			16.7	16.7		44.8				
Effective Green, g (s)		17.2			17.2	17.2		44.8				
Actuated g/C Ratio		0.25			0.25	0.25		0.64				
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)		306			420	370		2893				
v/s Ratio Prot					0.05							
v/s Ratio Perm		c0.19				0.03		0.32				
v/c Ratio		0.76			0.21	0.14		0.51				
Uniform Delay, d1		24.5			21.0	20.6		6.7				
Progression Factor		0.96			1.00	1.00		2.25				
Incremental Delay, d2		9.9			0.3	0.2		0.6				
Delay (s)		33.5			21.2	20.8		15.7				
Level of Service		C			C	C		B				
Approach Delay (s)		33.5			21.0			15.7			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	18.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
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
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)	72	29	0	0	67	30	26	1267	42	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	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)		1798			1786			4379				
Flt Permitted		0.72			1.00			1.00				
Satd. Flow (perm)		1338			1786			4379				
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)	83	33	0	0	77	34	30	1456	48	0	0	0
RTOR Reduction (vph)	0	0	0	0	27	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	116	0	0	84	0	0	1531	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)		9.8			9.8			51.7				
Effective Green, g (s)		10.3			10.3			51.7				
Actuated g/C Ratio		0.15			0.15			0.74				
Clearance Time (s)		4.5			4.5			4.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		197			263			3234				
v/s Ratio Prot					0.05							
v/s Ratio Perm		c0.09						0.35				
v/c Ratio		0.59			0.32			0.47				
Uniform Delay, d1		27.9			26.7			3.7				
Progression Factor		1.59			1.00			0.27				
Incremental Delay, d2		4.4			0.7			0.4				
Delay (s)		48.8			27.4			1.4				
Level of Service		D			C			A				
Approach Delay (s)		48.8			27.4			1.4			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.2	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	44.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	220	24	0	0	30	17	40	1442	20	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	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			4389				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1060			1418			4389				
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)	234	26	0	0	32	18	43	1534	21	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	260	0	0	37	0	0	1596	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)		19.8			19.8			40.2				
Effective Green, g (s)		20.3			20.3			41.7				
Actuated g/C Ratio		0.29			0.29			0.60				
Clearance Time (s)		4.5			4.5			5.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		307			411			2615				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.25						0.36				
v/c Ratio		0.85			0.09			0.61				
Uniform Delay, d1		23.4			18.1			9.0				
Progression Factor		0.67			1.00			0.72				
Incremental Delay, d2		18.7			0.1			1.0				
Delay (s)		34.4			18.2			7.4				
Level of Service		C			B			A				
Approach Delay (s)		34.4			18.2			7.4			0.0	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.4	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	55.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	50	14	0	0	7	9	21	1415	15	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
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			1378			4394				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1378			4394				
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)	57	16	0	0	8	10	24	1608	17	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	73	0	0	9	0	0	1648	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)		8.5			8.5			52.5				
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			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		146			177			3327				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.06						0.38				
v/c Ratio		0.50			0.05			0.50				
Uniform Delay, d1		28.4			26.8			3.3				
Progression Factor		0.81			1.00			0.33				
Incremental Delay, d2		2.6			0.1			0.4				
Delay (s)		25.5			26.9			1.5				
Level of Service		C			C			A				
Approach Delay (s)		25.5			26.9			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.8	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	44.9%	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	53	35	32	33	0	0	0	0	16	1227	34
Ideal Flow (vphpl)	1900	1900	1900	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						4425	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1189						4425	
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	59	39	36	37	0	0	0	0	18	1363	38
RTOR Reduction (vph)	0	34	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	64	0	0	73	0	0	0	0	0	1417	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)		8.3			8.3						53.2	
Effective Green, g (s)		8.8			8.8						53.2	
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)		177			149						3363	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.06						0.32	
v/c Ratio		0.36			0.49						0.42	
Uniform Delay, d1		28.0			28.5						3.0	
Progression Factor		1.00			0.90						0.72	
Incremental Delay, d2		1.3			2.5						0.4	
Delay (s)		29.3			28.2						2.5	
Level of Service		C			C						A	
Approach Delay (s)		29.3			28.2			0.0			2.5	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.3	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	41.6%	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	137	33	23	53	0	0	0	0	8	1094	73
Ideal Flow (vphpl)	1900	1900	1900	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			1468						4403	
Flt Permitted		1.00			0.88						1.00	
Satd. Flow (perm)		1451			1307						4403	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	149	36	25	58	0	0	0	0	9	1189	79
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	170	0	0	83	0	0	0	0	0	1270	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)		13.4			13.4						46.6	
Effective Green, g (s)		13.9			13.9						48.1	
Actuated g/C Ratio		0.20			0.20						0.69	
Clearance Time (s)		4.5			4.5						5.5	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		288			260						3025	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.06						0.29	
v/c Ratio		0.59			0.32						0.42	
Uniform Delay, d1		25.5			24.0						4.8	
Progression Factor		1.00			1.05						0.26	
Incremental Delay, d2		3.1			0.7						0.4	
Delay (s)		28.5			25.9						1.6	
Level of Service		C			C						A	
Approach Delay (s)		28.5			25.9			0.0			1.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.2	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	46.3%	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	71	19	15	42	0	0	0	0	18	1108	24
Ideal Flow (vphpl)	1900	1900	1900	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						4429	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1447			1341						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	77	21	16	46	0	0	0	0	20	1204	26
RTOR Reduction (vph)	0	18	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	80	0	0	62	0	0	0	0	0	1248	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)		8.2			8.2						53.3	
Effective Green, g (s)		8.7			8.7						53.3	
Actuated g/C Ratio		0.12			0.12						0.76	
Clearance Time (s)		4.5			4.5						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		180			167						3372	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.28	
v/c Ratio		0.45			0.37						0.37	
Uniform Delay, d1		28.4			28.1						2.8	
Progression Factor		1.00			0.60						0.27	
Incremental Delay, d2		1.8			1.4						0.3	
Delay (s)		30.2			18.2						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.2			18.2			0.0			1.0	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	38.7%	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	98	14	54	68	0	0	0	0	123	979	29
Ideal Flow (vphpl)	1900	1900	1900	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			1822						4568	
Flt Permitted		1.00			0.84						0.99	
Satd. Flow (perm)		1831			1566						4568	
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	103	15	57	72	0	0	0	0	129	1031	31
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	110	0	0	129	0	0	0	0	0	1187	0
Heavy Vehicles (%)	2%	2%	2%	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)		536			459						2708	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.08						0.26	
v/c Ratio		0.21			0.28						0.44	
Uniform Delay, d1		18.6			19.1						7.8	
Progression Factor		1.00			0.90						0.89	
Incremental Delay, d2		0.9			1.5						0.5	
Delay (s)		19.5			18.6						7.4	
Level of Service		B			B						A	
Approach Delay (s)		19.5			18.6			0.0			7.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.0%	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	26	142	0	0	0	0	20	318	721
Ideal Flow (vphpl)	1900	1900	1900	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					0.99						1.00	1.00
Satd. Flow (prot)					1320						2496	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1320						2496	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	28	151	0	0	0	0	21	338	767
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	129	129
Lane Group Flow (vph)	0	0	0	0	179	0	0	0	0	0	614	254
Heavy Vehicles (%)	2%	2%	2%	64%	5%	2%	2%	2%	2%	0%	13%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					15.0						46.0	46.0
Effective Green, g (s)					15.5						46.5	46.5
Actuated g/C Ratio					0.22						0.66	0.66
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					292						1658	930
v/s Ratio Prot												
v/s Ratio Perm					0.14						0.25	0.18
v/c Ratio					0.61						0.37	0.27
Uniform Delay, d1					24.5						5.2	4.8
Progression Factor					0.78						0.39	0.37
Incremental Delay, d2					3.7						0.6	0.7
Delay (s)					22.8						2.6	2.5
Level of Service					C						A	A
Approach Delay (s)		0.0			22.8			0.0			2.6	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	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	45.3%	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	1045	21	0	0	0	0	0	0	18	307	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)		3111									2595	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3111									2595	
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	1201	24	0	0	0	0	0	0	21	353	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	1224	0	0	0	0	0	0	0	0	366	0
Heavy Vehicles (%)	0%	4%	10%	2%	2%	2%	2%	2%	2%	0%	19%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		40.0									21.0	
Effective Green, g (s)		40.5									21.5	
Actuated g/C Ratio		0.58									0.31	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1800									797	
v/s Ratio Prot		c0.39										
v/s Ratio Perm											0.14	
v/c Ratio		0.68									0.46	
Uniform Delay, d1		10.2									19.6	
Progression Factor		0.77									1.47	
Incremental Delay, d2		1.9									0.4	
Delay (s)		9.7									29.2	
Level of Service		A									C	
Approach Delay (s)		9.7			0.0			0.0			29.2	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.3%	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)	111	619	0	0	0	0	0	1299	352	0	0	0
Ideal Flow (vphpl)	1900	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)	117	652	0	0	0	0	0	1367	371	0	0	0
RTOR Reduction (vph)	0	21	0	0	0	0	0	0	41	0	0	0
Lane Group Flow (vph)	0	748	0	0	0	0	0	1367	330	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)		17.8						43.7	43.7			
Effective Green, g (s)		17.8						44.2	44.2			
Actuated g/C Ratio		0.25						0.63	0.63			
Clearance Time (s)		4.0						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1164						1935	784			
v/s Ratio Prot								c0.45				
v/s Ratio Perm		0.16							0.27			
v/c Ratio		0.64						0.71	0.42			
Uniform Delay, d1		23.3						8.6	6.5			
Progression Factor		0.88						1.98	2.41			
Incremental Delay, d2		1.2						2.0	1.5			
Delay (s)		21.6						19.0	17.1			
Level of Service		C						B	B			
Approach Delay (s)		21.6			0.0			18.6			0.0	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	19.5	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	56.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	521	387	67	1253	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	537	399	69	1292	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	29	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	907	0	0	1356	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)					23.0			38.0				
Effective Green, g (s)					23.5			38.5				
Actuated g/C Ratio					0.34			0.55				
Clearance Time (s)					4.5			4.5				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1092			1619				
v/s Ratio Prot					c0.28							
v/s Ratio Perm								0.46				
v/c Ratio					0.83			0.84				
Uniform Delay, d1					21.4			13.1				
Progression Factor					1.00			0.68				
Incremental Delay, d2					5.5			3.9				
Delay (s)					26.9			12.8				
Level of Service					C			B				
Approach Delay (s)		0.0			26.9			12.8			0.0	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM Average Control Delay	18.6	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	70.1%	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	254	40	0	0	0	0	0	0	345	1042	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)		2947									4391	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2947									4391	
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	273	43	0	0	0	0	0	0	371	1120	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	56	0
Lane Group Flow (vph)	0	294	0	0	0	0	0	0	0	0	1435	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)		12.2									48.8	
Effective Green, g (s)		12.7									49.3	
Actuated g/C Ratio		0.18									0.70	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		535									3093	
v/s Ratio Prot		c0.10										
v/s Ratio Perm											0.33	
v/c Ratio		0.55									0.46	
Uniform Delay, d1		26.0									4.5	
Progression Factor		1.00									0.69	
Incremental Delay, d2		1.2									0.5	
Delay (s)		27.2									3.6	
Level of Service		C									A	
Approach Delay (s)		27.2			0.0			0.0			3.6	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.7	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	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	0	0	305	274	0	0	0	0	0	1187	59
Ideal Flow (vphpl)	1900	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	3276						4414	
Flt Permitted				0.95	0.99						1.00	
Satd. Flow (perm)				1264	3276						4414	
Peak-hour factor, PHF	0.92	0.92	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	332	298	0	0	0	0	0	1290	64
RTOR Reduction (vph)	0	0	0	33	33	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	173	391	0	0	0	0	0	1348	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)				15.9	15.9						45.1	
Effective Green, g (s)				16.4	16.4						45.6	
Actuated g/C Ratio				0.23	0.23						0.65	
Clearance Time (s)				4.5	4.5						4.5	
Vehicle Extension (s)				3.0	3.0						3.0	
Lane Grp Cap (vph)				296	768						2875	
v/s Ratio Prot				c0.14	0.12						c0.31	
v/s Ratio Perm												
v/c Ratio				0.58	0.51						0.47	
Uniform Delay, d1				23.8	23.3						6.1	
Progression Factor				1.27	1.31						1.00	
Incremental Delay, d2				1.8	0.3						0.6	
Delay (s)				32.0	30.9						6.7	
Level of Service				C	C						A	
Approach Delay (s)		0.0			31.2			0.0			6.7	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	1101	34	26	956	2	329	8	17	16	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)		3327		1727	3342		1681	1672			1762	
Flt Permitted		0.95		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3165		1727	3342		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)	5	1295	40	31	1125	2	387	9	20	19	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1339	0	31	1127	0	209	204	0	0	24	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	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)		71.9		5.2	81.1		17.0	17.0			4.9	
Effective Green, g (s)		72.9		5.2	82.1		18.0	18.0			5.9	
Actuated g/C Ratio		0.62		0.04	0.70		0.15	0.15			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)		1955		76	2325		256	255			88	
v/s Ratio Prot				0.02	c0.34		c0.12	0.12			c0.01	
v/s Ratio Perm		c0.42										
v/c Ratio		0.68		0.41	0.48		0.82	0.80			0.28	
Uniform Delay, d1		14.9		54.9	8.2		48.4	48.2			54.0	
Progression Factor		1.00		1.06	0.53		1.00	1.00			1.00	
Incremental Delay, d2		2.0		3.0	0.6		17.9	15.9			1.7	
Delay (s)		16.9		61.2	4.9		66.3	64.1			55.7	
Level of Service		B		E	A		E	E			E	
Approach Delay (s)		16.9			6.4			65.2			55.7	
Approach LOS		B			A			E			E	

Intersection Summary			
HCM Average Control Delay	20.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	1418	96	50	1005	0	203	8	103	48	18	23
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	3311		1727	3343		1665	1553			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3311		1727	3343		1665	1553			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)	25	1477	100	52	1047	0	211	8	107	50	19	24
RTOR Reduction (vph)	0	3	0	0	0	0	0	66	0	0	13	0
Lane Group Flow (vph)	25	1574	0	52	1047	0	169	91	0	0	80	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	65.9		7.4	66.7		14.4	14.4			11.3	
Effective Green, g (s)	6.6	66.9		7.4	67.7		15.4	15.4			12.3	
Actuated g/C Ratio	0.06	0.57		0.06	0.57		0.13	0.13			0.10	
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	1877		108	1918		217	203			183	
v/s Ratio Prot	0.01	c0.48		0.03	c0.31		c0.10	0.06			c0.05	
v/s Ratio Perm												
v/c Ratio	0.26	0.84		0.48	0.55		0.78	0.45			0.44	
Uniform Delay, d1	53.4	21.1		53.4	15.6		49.7	47.4			49.6	
Progression Factor	0.75	0.54		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.9	4.0		2.5	1.1		16.5	1.9			2.0	
Delay (s)	40.7	15.4		55.9	16.7		66.1	49.2			51.6	
Level of Service	D	B		E	B		E	D			D	
Approach Delay (s)		15.8			18.6			58.0			51.6	
Approach LOS		B			B			E			D	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	753	3	475	685	0	287
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		3144	1616		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3442		3144	1616		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	930	4	586	846	0	354
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	934	0	975	457	0	354
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)	25.3		28.1	65.4		28.1
Effective Green, g (s)	27.3		30.1	65.4		30.1
Actuated g/C Ratio	0.42		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)	1437		1447	1616		1222
v/s Ratio Prot	c0.27		c0.31	0.28		0.13
v/s Ratio Perm						
v/c Ratio	0.65		0.67	0.28		0.29
Uniform Delay, d1	15.2		13.8	0.0		11.0
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	0.9		1.1	0.4		0.1
Delay (s)	16.1		14.9	0.4		11.1
Level of Service	B		B	A		B
Approach Delay (s)	16.1		10.3		11.1	
Approach LOS	B		B		B	

Intersection Summary			
HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	65.4	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 (veh/h)	0	0	19	0	0	8	18	598	1	3	320	52
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	20	0	0	8	19	629	1	3	337	55
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	1053	1046	371	1033	1073	632	398			632		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1053	1046	371	1033	1073	632	398			632		
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)	197	224	674	202	216	483	1159			950		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	20	8	13	637	3	392
Volume Left	0	0	13	6	3	0
Volume Right	20	8	0	1	0	55
cSH	674	483	1159	1159	950	1700
Volume to Capacity	0.03	0.02	0.02	0.02	0.00	0.23
Queue Length 95th (ft)	2	1	1	1	0	0
Control Delay (s)	10.5	12.6	8.2	0.3	8.8	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	10.5	12.6	0.4		0.1	
Approach LOS	B	B				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	37.4%	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)	23	1	9	0	2	4	13	556	2	2	275	27
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)	25	1	10	0	2	4	14	598	2	2	296	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	946	942	310	937	956	599	325			600		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	946	942	310	937	956	599	325			600		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	100	99	100	99	99	99			100		
cM capacity (veh/h)	237	260	732	239	256	503	1241			977		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	35	6	14	600	2	325
Volume Left	25	0	14	0	2	0
Volume Right	10	4	0	2	0	29
cSH	291	380	1241	1700	977	1700
Volume to Capacity	0.12	0.02	0.01	0.35	0.00	0.19
Queue Length 95th (ft)	10	1	1	0	0	0
Control Delay (s)	19.1	14.6	7.9	0.0	8.7	0.0
Lane LOS	C	B	A		A	
Approach Delay (s)	19.1	14.6	0.2		0.1	
Approach LOS	C	B				

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	44.6%	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)	18	0	3	0	5	4	2	370	2	2	209	155
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)	21	0	3	0	6	5	2	425	2	2	240	178
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	771	766	329	679	854	426	418			428		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	771	766	329	679	854	426	418			428		
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 %	93	100	100	100	98	99	100			100		
cM capacity (veh/h)	311	334	717	351	285	609	1152			1143		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	24	10	2	428	2	418
Volume Left	21	0	2	0	2	0
Volume Right	3	5	0	2	0	178
cSH	339	373	1152	1700	1143	1700
Volume to Capacity	0.07	0.03	0.00	0.25	0.00	0.25
Queue Length 95th (ft)	6	2	0	0	0	0
Control Delay (s)	16.4	14.9	8.1	0.0	8.2	0.0
Lane LOS	C	B	A		A	
Approach Delay (s)	16.4	14.9	0.0		0.0	
Approach LOS	C	B				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	35.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	349	17	0	0	0	1	77	1	2	214	13
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	367	18	0	0	0	1	81	1	2	225	14
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			385			503	376	376	418	385	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			385			503	376	376	418	385	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	85	100	100	59	99
cM capacity (veh/h)	1604			1184			323	557	672	484	549	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	385	0	83	241
Volume Left	0	0	1	2
Volume Right	18	0	1	14
cSH	1604	1700	553	564
Volume to Capacity	0.00	0.00	0.15	0.43
Queue Length 95th (ft)	0	0	13	53
Control Delay (s)	0.0	0.0	12.7	16.1
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	12.7	16.1
Approach LOS			B	C

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	525	1	3	474	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)	565	1	3	510	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			566		1081	565
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			566		1081	565
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		96	100
cM capacity (veh/h)			977		195	444

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	566	513	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	977	220
Volume to Capacity	0.33	0.00	0.05
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.0	0.1	22.2
Lane LOS		A	C
Approach Delay (s)	0.0	0.1	22.2
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	518	0	2	498	9	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	563	0	2	541	10	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	552			566			1144	1140	568	1135	1135	548
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	552			566			1144	1140	568	1135	1135	548
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	95	99	99
cM capacity (veh/h)	1002			989			172	200	524	173	196	527

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	572	553	1	18
Volume Left	9	2	0	9
Volume Right	0	10	0	8
cSH	1002	989	200	244
Volume to Capacity	0.01	0.00	0.01	0.08
Queue Length 95th (ft)	1	0	0	6
Control Delay (s)	0.2	0.1	23.1	21.0
Lane LOS	A	A	C	C
Approach Delay (s)	0.2	0.1	23.1	21.0
Approach LOS			C	C

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	47.5%	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)	1	521	1	1	493	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	566	1	1	536	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	537			567			1109	1108	567	1109	1108	536
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	537			567			1109	1108	567	1109	1108	536
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)	1016			990			186	209	523	186	209	544

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	568	538	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	1016	990	275	278
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	18.2	18.1
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	18.2	18.1
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	38.2%	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)	43	441	32	9	441	10	6	2	2	16	1	29
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)	47	485	35	10	485	11	7	2	2	18	1	32
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	498			520			1140	1114	504	1114	1126	493
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	498			520			1140	1114	504	1114	1126	493
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
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 %	95			99			96	99	100	90	99	94
cM capacity (veh/h)	1049			1012			161	198	570	175	193	574

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	567	505	11	51
Volume Left	47	10	7	18
Volume Right	35	11	2	32
cSH	1049	1012	197	312
Volume to Capacity	0.05	0.01	0.06	0.16
Queue Length 95th (ft)	4	1	4	14
Control Delay (s)	1.2	0.3	24.4	18.7
Lane LOS	A	A	C	C
Approach Delay (s)	1.2	0.3	24.4	18.7
Approach LOS			C	C

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	459	0	0	25	460
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	499	0	0	27	500
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			554	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			554	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)			485	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	499	27	500
Volume Left	0	27	0
Volume Right	499	0	0
cSH	1700	1578	1700
Volume to Capacity	0.29	0.02	0.29
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.4	
Approach LOS			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	471	5	0	15	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)	518	5	0	16	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		1038	1038	1041	0
vC1, stage 1 conf vol			1038	1038	0	
vC2, stage 2 conf vol			0	0	1041	
vCu, unblocked vol	0		1038	1038	1041	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 %	67		100	91	100	100
cM capacity (veh/h)	1585		171	182	186	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	345	178	16
Volume Left	345	173	0
Volume Right	0	5	0
cSH	1585	1585	182
Volume to Capacity	0.33	0.33	0.09
Queue Length 95th (ft)	36	36	7
Control Delay (s)	8.4	8.2	26.8
Lane LOS	A	A	D
Approach Delay (s)	8.3		26.8
Approach LOS			D

Intersection Summary			
Average Delay	8.9		
Intersection Capacity Utilization	23.6%	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)	20	3	0	0	159	7	11	464	19	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)	23	3	0	0	181	8	12	527	22	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	387	574	0	565	563	274	0			549		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	387	574	0	565	563	274	0			549		
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 %	94	99	100	100	58	99	99			100		
cM capacity (veh/h)	365	429	1091	405	432	726	1600			1017		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	26	189	276	285
Volume Left	23	0	12	0
Volume Right	0	8	0	22
cSH	372	440	1600	1700
Volume to Capacity	0.07	0.43	0.01	0.17
Queue Length 95th (ft)	6	53	1	0
Control Delay (s)	15.4	19.2	0.4	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.4	19.2	0.2	
Approach LOS	C	C		

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	35.9%	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)	7	6	0	0	15	2	5	477	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	16	2	5	497	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	269	512	2	515	510	251	0			502		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	269	512	2	515	510	251	0			502		
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 %	99	99	100	100	97	100	100			100		
cM capacity (veh/h)	647	466	1086	441	468	755	1593			1058		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	18	254	254
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	549	490	1593	1700
Volume to Capacity	0.02	0.04	0.00	0.15
Queue Length 95th (ft)	2	3	0	0
Control Delay (s)	11.7	12.6	0.2	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.7	12.6	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		0.8		
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 (veh/h)	9	6	0	0	85	8	18	443	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)	10	7	0	0	99	9	21	515	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	361	571	4	569	567	265	3			526		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	361	571	4	569	567	265	3			526		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.3			2.2		
p0 queue free %	97	98	100	100	74	99	99			100		
cM capacity (veh/h)	411	386	1019	357	387	679	1571			1033		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	17	108	278	265
Volume Left	10	0	21	0
Volume Right	0	9	0	7
cSH	400	402	1571	1700
Volume to Capacity	0.04	0.27	0.01	0.16
Queue Length 95th (ft)	3	27	1	0
Control Delay (s)	14.4	17.2	0.7	0.0
Lane LOS	B	C	A	
Approach Delay (s)	14.4	17.2	0.3	
Approach LOS	B	C		

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	30.6%	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)	0	11	3	79	21	0	0	0	0	3	314	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	13	4	94	25	0	0	0	0	4	374	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	0.95	0.95	0.95	0.95	0.95		0.95					
vC, conflicting volume	401	396	195	211	400	7	386			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	272	266	55	73	271	7	257			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	4.1	3.4	2.2			2.3		
p0 queue free %	100	98	100	89	96	100	100			100		
cM capacity (veh/h)	571	574	912	827	589	1055	1241			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	17	119	190	196
Volume Left	0	94	4	0
Volume Right	4	0	0	10
cSH	624	762	1541	1700
Volume to Capacity	0.03	0.16	0.00	0.12
Queue Length 95th (ft)	2	14	0	0
Control Delay (s)	10.9	10.6	0.2	0.0
Lane LOS	B	B	A	
Approach Delay (s)	10.9	10.6	0.1	
Approach LOS	B	B		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	30.1%	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	11	2	15	10	0	0	0	0	9	371	11
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	12	2	16	11	0	0	0	0	10	399	12
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	433	425	207	230	431	4	411			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	433	425	207	230	431	4	411			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	98	100	98	98	100	100			99		
cM capacity (veh/h)	499	520	805	693	516	1080	1145			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	14	27	209	211
Volume Left	0	16	10	0
Volume Right	2	0	0	12
cSH	550	609	1576	1700
Volume to Capacity	0.03	0.04	0.01	0.12
Queue Length 95th (ft)	2	3	0	0
Control Delay (s)	11.7	11.2	0.4	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.7	11.2	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization		29.4%	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	12	329	61	0	28	1	114	39	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	13	350	65	0	30	1	121	41	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	415			0			429	408	209	218	440	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	415			0			429	408	209	218	440	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	94	100	82	92	100
cM capacity (veh/h)	1141			1565			480	531	803	685	507	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	188	240	31	163
Volume Left	13	0	0	121
Volume Right	0	65	1	0
cSH	1565	1700	538	629
Volume to Capacity	0.01	0.14	0.06	0.26
Queue Length 95th (ft)	1	0	5	26
Control Delay (s)	0.6	0.0	12.1	12.7
Lane LOS	A		B	B
Approach Delay (s)	0.2		12.1	12.7
Approach LOS			B	B

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	33.1%	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	10	15	0	42	0	0	0	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	11	16	0	46	0	0	0	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	46			27			65	73	46	65	65	19
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	46			27			65	73	46	65	65	19
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			100	100	100	99	100	100
cM capacity (veh/h)	1562			1587			929	818	1024	915	815	1042

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	27	46	0	5
Volume Left	0	0	0	5
Volume Right	16	0	0	0
cSH	1562	1587	1700	915
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	0.0	9.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	9.0
Approach LOS			A	A

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	1	9	41	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	10	45	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	57	45	46			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	57	45	46			
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)	950	1025	1575			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	11	46
Volume Left	1	1	0
Volume Right	1	0	1
cSH	986	1575	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	0.5		
Intersection Capacity Utilization	13.3%	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)	32	370	4	4	412	6	15	3	5	5	0	40
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)	37	425	5	5	474	7	17	3	6	6	0	46
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	474			430			1030	984	428	993	990	477
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	474			430			1030	984	428	993	990	477
tC, single (s)	4.2			4.1			7.3	6.7	6.4	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.7	4.2	3.5	3.6	4.1	3.4
p0 queue free %	96			100			90	98	99	97	100	92
cM capacity (veh/h)	1043			1140			175	222	591	205	229	570

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	37	430	5	480	26	52
Volume Left	37	0	5	0	17	6
Volume Right	0	5	0	7	6	46
cSH	1043	1700	1140	1700	213	476
Volume to Capacity	0.04	0.25	0.00	0.28	0.12	0.11
Queue Length 95th (ft)	3	0	0	0	10	9
Control Delay (s)	8.6	0.0	8.2	0.0	24.2	13.5
Lane LOS	A		A		C	B
Approach Delay (s)	0.7		0.1		24.2	13.5
Approach LOS					C	B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	38.2%	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)	16	313	9	14	366	92	8	13	36	49	6	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	340	10	15	398	100	9	14	39	53	7	27
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	498			350			889	908	345	904	863	448
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	498			350			889	908	345	904	863	448
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			96	94	94	77	98	96
cM capacity (veh/h)	1026			1166			231	255	671	228	285	613

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	367	513	62	87
Volume Left	17	15	9	53
Volume Right	10	100	39	27
cSH	1026	1166	409	289
Volume to Capacity	0.02	0.01	0.15	0.30
Queue Length 95th (ft)	1	1	13	31
Control Delay (s)	0.6	0.4	15.4	22.7
Lane LOS	A	A	C	C
Approach Delay (s)	0.6	0.4	15.4	22.7
Approach LOS			C	C

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	47.6%	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)	9	271	2	4	0	265	0	30	27	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)	10	304	2	4	0	298	0	34	30	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	298			307			335	633	306	381	336	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	298			307			335	633	306	381	336	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	91	96	100	100	100
cM capacity (veh/h)	1235			610			611	391	734	511	576	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	10	307	4	298	64
Volume Left	10	0	4	0	0
Volume Right	0	2	0	298	30
cSH	1235	1700	610	1700	502
Volume to Capacity	0.01	0.18	0.01	0.18	0.13
Queue Length 95th (ft)	1	0	1	0	11
Control Delay (s)	7.9	0.0	10.9	0.0	13.2
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.2		13.2
Approach LOS					B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	37	0	2	0	0	0	29	47	2	30	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)	44	0	2	0	0	0	34	55	2	35	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		106	89	0	161	88	1
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			2		106	89	0	161	88	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	96	95	100	95	100
cM capacity (veh/h)	1554			1620		819	773	1076	726	783	1089

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	46	0	89	38
Volume Left	44	0	0	2
Volume Right	2	0	55	0
cSH	1554	1700	936	779
Volume to Capacity	0.03	0.00	0.10	0.05
Queue Length 95th (ft)	2	0	8	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	14.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	49	0	0	39	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	53	0	0	42	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		96	53
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			53		96	53
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1552		904	1014

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	53	42	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1552	1700
Volume to Capacity	0.03	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	0	0	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	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)	10	313	4	14	406	29	9	7	23	30	7	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
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			1761	1538		1748	
Flt Permitted		0.99			0.99			0.80	1.00		0.80	
Satd. Flow (perm)		1747			1824			1444	1538		1449	
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)	11	337	4	15	437	31	10	8	25	32	8	13
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	22	0	11	0
Lane Group Flow (vph)	0	352	0	0	481	0	0	18	3	0	42	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)		23.0			23.0			4.2	4.2		4.2	
Effective Green, g (s)		23.5			23.5			4.7	4.7		4.7	
Actuated g/C Ratio		0.65			0.65			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)		1134			1184			187	200		188	
v/s Ratio Prot												
v/s Ratio Perm		0.20			c0.26			0.01	0.00		c0.03	
v/c Ratio		0.31			0.41			0.10	0.02		0.22	
Uniform Delay, d1		2.8			3.0			13.9	13.7		14.1	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.2			0.2	0.0		0.6	
Delay (s)		2.9			3.3			14.1	13.8		14.7	
Level of Service		A			A			B	B		B	
Approach Delay (s)		2.9			3.3			13.9			14.7	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	36.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	169	14	2	229	18	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)	192	16	2	260	20	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			208		457	192
vC1, stage 1 conf vol					192	
vC2, stage 2 conf vol					265	
vCu, unblocked vol			208		457	192
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)			1369		681	820

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	192	16	2	260	24
Volume Left	0	0	2	0	20
Volume Right	0	16	0	0	3
cSH	1700	1700	1369	1700	698
Volume to Capacity	0.11	0.01	0.00	0.15	0.03
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.6	0.0	10.3
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.3
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	22.1%	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)	112	1137	10	0	0	0	0	52	23	15	76	0
Ideal Flow (vphpl)	1900	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						3238			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3343						3238			3068	
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)	120	1223	11	0	0	0	0	56	25	16	82	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1354	0	0	0	0	0	58	0	0	98	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)		54.6						6.4			6.4	
Effective Green, g (s)		55.1						6.9			6.9	
Actuated g/C Ratio		0.79						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)		2631						319			302	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.40									c0.03	
v/c Ratio		0.51						0.18			0.32	
Uniform Delay, d1		2.7						29.0			29.4	
Progression Factor		1.00						1.00			0.61	
Incremental Delay, d2		0.7						0.3			0.6	
Delay (s)		3.4						29.2			18.6	
Level of Service		A						C			B	
Approach Delay (s)		3.4			0.0			29.2			18.6	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	5.7	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	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	1112	60	0	0	0	0	75	114	73	77	0
Ideal Flow (vphpl)	1900	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			0.76	
Satd. Flow (perm)		3335						1711			1261	
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)	16	1308	71	0	0	0	0	88	134	86	91	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	31	0	0	0	0
Lane Group Flow (vph)	0	1391	0	0	0	0	0	191	0	0	177	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)		29.1						13.8			13.8	
Effective Green, g (s)		29.1						13.8			13.8	
Actuated g/C Ratio		0.57						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)		1907						464			342	
v/s Ratio Prot								0.11				
v/s Ratio Perm		0.42									c0.14	
v/c Ratio		0.73						0.41			0.52	
Uniform Delay, d1		8.0						15.2			15.7	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		1.3						0.6			1.3	
Delay (s)		9.3						15.8			17.1	
Level of Service		A						B			B	
Approach Delay (s)		9.3			0.0			15.8			17.1	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	50.9	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	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	1100	17	0	0	0	0	24	23	24	26	0
Ideal Flow (vphpl)	1900	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			1352	
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)	22	1134	18	0	0	0	0	25	24	25	27	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	0	1173	0	0	0	0	0	28	0	0	52	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)		29.6						4.4			4.4	
Effective Green, g (s)		30.1						4.9			4.9	
Actuated g/C Ratio		0.70						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)		2346						182			154	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.35									c0.04	
v/c Ratio		0.50						0.15			0.34	
Uniform Delay, d1		3.0						17.2			17.6	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.4			1.3	
Delay (s)		3.1						17.6			18.9	
Level of Service		A						B			B	
Approach Delay (s)		3.1			0.0			17.6			18.9	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	43.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	44	1122	18	0	0	0	0	29	34	41	42	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)	45	1157	19	0	0	0	0	30	35	42	43	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			1175			1278	1257	588	719	1266	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1175			1278	1257	588	719	1266	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	82	92	83	74	100
cM capacity (veh/h)	1607			590			95	164	450	248	166	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	624	597	65	86
Volume Left	45	0	0	42
Volume Right	0	19	35	0
cSH	1607	1700	249	198
Volume to Capacity	0.03	0.35	0.26	0.43
Queue Length 95th (ft)	2	0	25	50
Control Delay (s)	0.8	0.0	24.4	36.3
Lane LOS	A		C	E
Approach Delay (s)	0.4		24.4	36.3
Approach LOS			C	E

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	50.7%	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)	93	809	11	0	0	0	0	336	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						3459				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3459				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	101	879	12	0	0	0	0	365	9	0	0	0
RTOR Reduction (vph)	51	2	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	50	889	0	0	0	0	0	371	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	17.3	17.3						9.7				
Effective Green, g (s)	18.3	18.3						10.7				
Actuated g/C Ratio	0.49	0.49						0.29				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	867	1644						1000				
v/s Ratio Prot		c0.27						c0.11				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.54						0.37				
Uniform Delay, d1	4.9	6.5						10.5				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.4						0.2				
Delay (s)	4.9	6.8						10.7				
Level of Service	A	A						B				
Approach Delay (s)		6.6			0.0			10.7			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	37.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.3%	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)	16	1014	66	0	0	0	0	25	161	39	30	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		0.77	
Satd. Flow (perm)		2893	1300					1575	1504		1426	
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)	17	1090	71	0	0	0	0	27	173	42	32	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	57	57	0	0	0
Lane Group Flow (vph)	0	1107	62	0	0	0	0	44	42	0	74	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)		53.3	53.3					7.7	7.7		7.7	
Effective Green, g (s)		53.8	53.8					8.2	8.2		8.2	
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)		2223	999					185	176		167	
v/s Ratio Prot		c0.38						0.03				
v/s Ratio Perm			0.05						0.03		c0.05	
v/c Ratio		0.50	0.06					0.24	0.24		0.44	
Uniform Delay, d1		3.0	2.0					28.1	28.1		28.8	
Progression Factor		0.30	0.20					1.00	1.00		1.00	
Incremental Delay, d2		0.7	0.1					0.7	0.7		1.9	
Delay (s)		1.6	0.5					28.7	28.8		30.6	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.6			0.0			28.8			30.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	6.8	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	50.1%	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)	22	987	23	0	0	0	0	11	81	7	9	0
Ideal Flow (vphpl)	1900	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			1458	
Flt Permitted		1.00						1.00			0.84	
Satd. Flow (perm)		2882						1314			1258	
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)	23	1039	24	0	0	0	0	12	85	7	9	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	67	0	0	0	0
Lane Group Flow (vph)	0	1085	0	0	0	0	0	30	0	0	16	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)		55.5						6.5			6.5	
Effective Green, g (s)		55.5						6.5			6.5	
Actuated g/C Ratio		0.79						0.09			0.09	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2285						122			117	
v/s Ratio Prot								c0.02				
v/s Ratio Perm		0.38									0.01	
v/c Ratio		0.47						0.24			0.14	
Uniform Delay, d1		2.4						29.5			29.2	
Progression Factor		0.47						1.00			1.00	
Incremental Delay, d2		0.5						1.0			0.5	
Delay (s)		1.7						30.5			29.7	
Level of Service		A						C			C	
Approach Delay (s)		1.7			0.0			30.5			29.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.0%	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	854	15	0	0	0	0	0	27	272	192	0
Ideal Flow (vphpl)	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	1403	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2887							1289	1681	1403	
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	899	16	0	0	0	0	0	28	286	202	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	24	174	12	0
Lane Group Flow (vph)	0	913	0	0	0	0	0	0	4	66	236	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)		28.2							9.5	18.8	18.8	
Effective Green, g (s)		28.7							10.0	19.3	19.3	
Actuated g/C Ratio		0.41							0.14	0.28	0.28	
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)		1184							184	463	387	
v/s Ratio Prot		c0.32							c0.00	0.04	c0.17	
v/s Ratio Perm												
v/c Ratio		0.77							0.02	0.14	0.61	
Uniform Delay, d1		17.8							25.8	19.1	22.1	
Progression Factor		1.10							1.00	1.00	1.00	
Incremental Delay, d2		4.6							0.2	0.6	7.0	
Delay (s)		24.3							26.0	19.8	29.1	
Level of Service		C							C	B	C	
Approach Delay (s)		24.3			0.0			26.0			24.5	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
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)	7	361	11	0	0	0	0	42	24	433	44	0
Ideal Flow (vphpl)	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						1417		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2879						1417		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	384	12	0	0	0	0	45	26	461	47	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	400	0	0	0	0	0	48	0	254	254	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)		17.5						6.8		32.2	32.2	
Effective Green, g (s)		18.0						7.3		32.7	32.7	
Actuated g/C Ratio		0.26						0.10		0.47	0.47	
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)		740						148		785	635	
v/s Ratio Prot								c0.03		0.15	c0.19	
v/s Ratio Perm		0.14										
v/c Ratio		0.54						0.32		0.32	0.40	
Uniform Delay, d1		22.4						29.1		11.7	12.2	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		0.8						1.3		1.1	1.9	
Delay (s)		23.2						30.4		12.8	14.1	
Level of Service		C						C		B	B	
Approach Delay (s)		23.2			0.0			30.4			13.4	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	37.0%	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	291	0	469	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	323	0	521	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	323	0	521	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)		27.9		27.9		
Effective Green, g (s)		27.9		27.9		
Actuated g/C Ratio		0.73		0.73		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1315		1550		
v/s Ratio Prot		0.18		c0.25		
v/s Ratio Perm						
v/c Ratio		0.25		0.34		
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	0.34		
Actuated Cycle Length (s)	38.0	Sum of lost time (s)	10.1
Intersection Capacity Utilization	35.3%	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	12	831	21	17	154	0	0	85	229
Ideal Flow (vphpl)	1900	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			3378			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3490			3045			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	12	866	22	18	160	0	0	89	239
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	95	0
Lane Group Flow (vph)	0	0	0	0	899	0	0	178	0	0	233	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)					49.9			11.1			11.1	
Effective Green, g (s)					50.4			11.6			11.6	
Actuated g/C Ratio					0.72			0.17			0.17	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2513			505			496	
v/s Ratio Prot											c0.08	
v/s Ratio Perm					0.26			0.06				
v/c Ratio					0.36			0.35			0.47	
Uniform Delay, d1					3.7			25.9			26.4	
Progression Factor					1.26			1.04			1.00	
Incremental Delay, d2					0.4			0.4			0.7	
Delay (s)					5.0			27.3			27.1	
Level of Service					A			C			C	
Approach Delay (s)		0.0			5.0			27.3			27.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	70.0	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	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	1116	18	12	359	0	0	48	257
Ideal Flow (vphpl)	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)					3352			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3352			1680			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	14	1187	19	13	382	0	0	51	273
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	61
Lane Group Flow (vph)	0	0	0	0	1218	0	0	395	0	0	51	212
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)					2059			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.36			c0.24				0.13
v/c Ratio					0.59			0.87			0.11	0.48
Uniform Delay, d1					8.2			24.3			19.1	21.4
Progression Factor					0.56			1.00			1.00	1.00
Incremental Delay, d2					1.2			19.3			0.5	3.8
Delay (s)					5.8			43.6			19.6	25.2
Level of Service					A			D			B	C
Approach Delay (s)		0.0			5.8			43.6			24.3	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	16.6	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	77.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	41	1055	87	30	64	0	0	199	90
Ideal Flow (vphpl)	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	1555		1815			1794	
Flt Permitted					1.00	1.00		0.85			1.00	
Satd. Flow (perm)					3567	1555		1560			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	43	1111	92	32	67	0	0	209	95
RTOR Reduction (vph)	0	0	0	0	0	41	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1154	51	0	99	0	0	280	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)					27.2	27.2		13.7			13.7	
Effective Green, g (s)					27.2	27.2		13.7			13.7	
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)					1984	865		437			503	
v/s Ratio Prot											c0.16	
v/s Ratio Perm					0.32	0.03		0.06				
v/c Ratio					0.58	0.06		0.23			0.56	
Uniform Delay, d1					7.1	5.0		13.5			15.0	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.4	0.0		0.3			1.3	
Delay (s)					7.6	5.0		13.8			16.4	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			7.4			13.8			16.4	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	48.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	31	1206	5	17	7	0	0	10	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
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			1618			1778	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3324			1676			1778	
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	33	1283	5	18	7	0	0	11	10
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1321	0	0	25	0	0	21	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)					30.0			1.3			1.3	
Effective Green, g (s)					30.5			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)					2516			75			79	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.40			c0.01				
v/c Ratio					0.53			0.33			0.27	
Uniform Delay, d1					2.0			18.7			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.2			2.6			1.8	
Delay (s)					2.2			21.3			20.4	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.2			21.3			20.4	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	2.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	40.3	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	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	40	1103	11	49	12	0	0	17	10
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	44	1212	12	54	13	0	0	19	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1224			0			714	1312	0	1313	1306	612
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1224			0			714	1312	0	1313	1306	612
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			81	91	100	100	88	98
cM capacity (veh/h)	565			1622			276	153	1084	108	157	441

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	650	618	67	30
Volume Left	44	0	54	0
Volume Right	0	12	0	11
cSH	1622	1700	239	206
Volume to Capacity	0.03	0.36	0.28	0.14
Queue Length 95th (ft)	2	0	28	12
Control Delay (s)	0.8	0.0	25.9	25.4
Lane LOS	A		D	D
Approach Delay (s)	0.4		25.9	25.4
Approach LOS			D	D

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	48.7%	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)	0	0	0	0	1092	2	394	17	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		1603	1613				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1603	1613				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	1227	2	443	19	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	168	168	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1229	0	62	64	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					23.9		8.0	8.0				0.6
Effective Green, g (s)					24.9		9.0	9.0				1.6
Actuated g/C Ratio					0.52		0.19	0.19				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)					1762		304	306				54
v/s Ratio Prot					c0.37							
v/s Ratio Perm							0.04	0.04				c0.00
v/c Ratio					0.70		0.20	0.21				0.00
Uniform Delay, d1					8.5		16.2	16.2				22.2
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.2		0.3	0.3				0.0
Delay (s)					9.7		16.6	16.6				22.2
Level of Service					A		B	B				C
Approach Delay (s)		0.0			9.7			16.6			22.2	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	47.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1108	167	0	80
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	1166	176	0	84
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1166				1166	583
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1166				1166	583
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	81
cM capacity (veh/h)	595				184	451

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	583	583	176	84
Volume Left	0	0	0	0
Volume Right	0	0	176	84
cSH	1700	1700	1700	451
Volume to Capacity	0.34	0.34	0.10	0.19
Queue Length 95th (ft)	0	0	0	17
Control Delay (s)	0.0	0.0	0.0	14.8
Lane LOS				B
Approach Delay (s)	0.0			14.8
Approach LOS				B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	435	972	0	0	8	92	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)	448	1002	0	0	8	95	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			448	448	448	1451	1451	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			448	448	448	1451	1451	
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	27	100	
cM capacity (veh/h)			506	610	521	131	467	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	782	668	8	95
Volume Left	0	0	8	0
Volume Right	334	668	0	0
cSH	1700	1700	521	131
Volume to Capacity	0.46	0.39	0.02	0.73
Queue Length 95th (ft)	0	0	1	103
Control Delay (s)	0.0	0.0	12.0	83.9
Lane LOS			B	F
Approach Delay (s)	0.0		78.1	
Approach LOS			F	

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	49	0	0	1085	0	440
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)	53	0	0	1179	0	478
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	53	0	0	1179	0	478
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)	13.1			44.5		66.6
Effective Green, g (s)	13.6			45.0		66.6
Actuated g/C Ratio	0.20			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	361			2368		2787
v/s Ratio Prot	0.03			c0.34		
v/s Ratio Perm						c0.17
v/c Ratio	0.15			0.50		0.17
Uniform Delay, d1	21.7			5.3		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.7		0.1
Delay (s)	21.8			6.0		0.1
Level of Service	C			A		A
Approach Delay (s)	21.8			6.0	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	66.6	Sum of lost time (s)	4.0
Intersection Capacity Utilization	41.7%	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	556	529	440	34
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			0.42	1.00	1.00	
Satd. Flow (perm)			746	1845	3468	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	579	551	458	35
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	579	551	487	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)			47.6	52.1	25.1	
Effective Green, g (s)			48.6	52.6	25.6	
Actuated g/C Ratio			0.73	0.79	0.38	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			872	1457	1333	
v/s Ratio Prot			c0.23	0.30	0.14	
v/s Ratio Perm			c0.26			
v/c Ratio			0.66	0.38	0.37	
Uniform Delay, d1			3.9	2.1	14.7	
Progression Factor			0.40	0.09	1.00	
Incremental Delay, d2			1.3	0.6	0.1	
Delay (s)			2.9	0.8	14.7	
Level of Service			A	A	B	
Approach Delay (s)	0.0			1.9	14.7	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	66.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	50.7%	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	331	131	0	0	0
Ideal Flow (vphpl)	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		0.96				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2561				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2561				
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	356	141	0	0	0
RTOR Reduction (vph)	261	62	0	0	0	23	0	57	0	0	0	0
Lane Group Flow (vph)	360	569	0	0	0	0	0	440	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	13%	19%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	38.7	38.7				1.9		17.4				
Effective Green, g (s)	39.2	39.2				0.9		17.9				
Actuated g/C Ratio	0.56	0.56				0.01		0.26				
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)	906	931				16		655				
v/s Ratio Prot								c0.17				
v/s Ratio Perm	0.22	0.34				c0.00						
v/c Ratio	0.40	0.61				0.02		0.67				
Uniform Delay, d1	8.7	10.3				34.1		23.4				
Progression Factor	0.72	0.20				1.00		1.00				
Incremental Delay, d2	0.9	2.1				0.2		2.7				
Delay (s)	7.1	4.2				34.3		26.1				
Level of Service	A	A				C		C				
Approach Delay (s)		5.6			34.3			26.1			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
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	158	18	33	1273	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			4886				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1268			1631			4886				
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	35	1340	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	39	0	0	176	0	0	1381	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	16%	5%	5%	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)		13.0			13.0			48.0				
Effective Green, g (s)		13.5			13.5			48.5				
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)		245			315			3385				
v/s Ratio Prot					c0.11							
v/s Ratio Perm		0.03						0.28				
v/c Ratio		0.16			0.56			0.41				
Uniform Delay, d1		23.5			25.6			4.6				
Progression Factor		1.07			1.00			0.68				
Incremental Delay, d2		0.3			2.2			0.3				
Delay (s)		25.6			27.7			3.4				
Level of Service		C			C			A				
Approach Delay (s)		25.6			27.7			3.4			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
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			

HCM Signalized Intersection Capacity Analysis
306: S "L" 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)	90	144	0	0	82	114	52	1349	84	0	0	0
Ideal Flow (vphpl)	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		4521				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4521				
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	55	1420	88	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	33	0	8	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	63	0	1555	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	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				0.04		0.34				
v/c Ratio		0.78			0.22	0.17		0.54				
Uniform Delay, d1		24.3			20.6	20.3		7.2				
Progression Factor		0.96			1.00	1.00		2.22				
Incremental Delay, d2		11.3			0.3	0.2		0.7				
Delay (s)		34.7			20.9	20.5		16.8				
Level of Service		C			C	C		B				
Approach Delay (s)		34.7			20.7			16.8			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	19.4	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	56.3%	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)	76	31	0	0	71	32	28	1345	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			4379				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4379				
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	1546	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	27	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	92	0	0	1627	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			3128				
v/s Ratio Prot					0.05							
v/s Ratio Perm		c0.09						0.37				
v/c Ratio		0.54			0.30			0.52				
Uniform Delay, d1		26.5			25.3			4.5				
Progression Factor		1.61			1.00			0.28				
Incremental Delay, d2		2.6			0.6			0.5				
Delay (s)		45.1			25.9			1.8				
Level of Service		D			C			A				
Approach Delay (s)		45.1			25.9			1.8			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.2	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	46.7%	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)	233	25	0	0	32	18	42	1530	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	45	1628	22	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	275	0	0	40	0	0	1693	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)		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						0.39				
v/c Ratio		0.87			0.09			0.66				
Uniform Delay, d1		23.3			17.7			9.7				
Progression Factor		0.67			1.00			0.68				
Incremental Delay, d2		22.1			0.1			1.2				
Delay (s)		37.7			17.8			7.8				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.8			7.8			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.0	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 (vph)	53	15	0	0	7	10	22	1502	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			4394				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1134			1374			4394				
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	1707	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	1749	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			3308				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.40				
v/c Ratio		0.51			0.05			0.53				
Uniform Delay, d1		28.2			26.5			3.6				
Progression Factor		0.83			1.00			0.29				
Incremental Delay, d2		2.6			0.1			0.4				
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	2.8	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	46.9%	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	1302	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						4425	
Flt Permitted		1.00			0.80						1.00	
Satd. Flow (perm)		1410			1185						4425	
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	1447	40
RTOR Reduction (vph)	0	36	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	67	0	0	77	0	0	0	0	0	1504	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						3350	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.06						0.34	
v/c Ratio		0.37			0.51						0.45	
Uniform Delay, d1		27.9			28.4						3.1	
Progression Factor		1.00			0.92						0.69	
Incremental Delay, d2		1.3			2.6						0.4	
Delay (s)		29.2			28.7						2.6	
Level of Service		C			C						A	
Approach Delay (s)		29.2			28.7			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	43.4%	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	145	35	24	56	0	0	0	0	8	1161	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			1468						4403	
Flt Permitted		1.00			0.88						1.00	
Satd. Flow (perm)		1451			1305						4403	
Peak-hour factor, PHF	0.92	0.92	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	61	0	0	0	0	9	1262	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	87	0	0	0	0	0	1348	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			268						2994	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.07						0.31	
v/c Ratio		0.61			0.32						0.45	
Uniform Delay, d1		25.2			23.7						5.2	
Progression Factor		1.00			1.05						0.26	
Incremental Delay, d2		3.5			0.7						0.5	
Delay (s)		28.7			25.5						1.8	
Level of Service		C			C						A	
Approach Delay (s)		28.7			25.5			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	48.3%	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	1176	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	1278	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	1324	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						0.39	
Uniform Delay, d1		28.4			28.1						2.9	
Progression Factor		1.00			0.59						0.24	
Incremental Delay, d2		1.9			1.4						0.3	
Delay (s)		30.3			18.0						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.3			18.0			0.0			1.0	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.8	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	40.2%	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	104	15	57	72	0	0	0	0	131	1039	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			1823						4568	
Flt Permitted		1.00			0.84						0.99	
Satd. Flow (perm)		1831			1557						4568	
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	76	0	0	0	0	138	1094	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	136	0	0	0	0	0	1261	0
Heavy Vehicles (%)	2%	2%	2%	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)		536			456						2708	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.28	
v/c Ratio		0.22			0.30						0.47	
Uniform Delay, d1		18.7			19.2						8.0	
Progression Factor		1.00			0.92						0.86	
Incremental Delay, d2		0.9			1.6						0.5	
Delay (s)		19.6			19.2						7.4	
Level of Service		B			B						A	
Approach Delay (s)		19.6			19.2			0.0			7.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.5	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	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	0	0	28	151	0	0	0	0	21	337	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					0.99						1.00	1.00
Satd. Flow (prot)					1320						2496	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1320						2496	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	161	0	0	0	0	22	359	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	141	141
Lane Group Flow (vph)	0	0	0	0	191	0	0	0	0	0	647	266
Heavy Vehicles (%)	2%	2%	2%	64%	5%	2%	2%	2%	2%	0%	13%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					15.7						45.3	45.3
Effective Green, g (s)					16.2						45.8	45.8
Actuated g/C Ratio					0.23						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)					305						1633	916
v/s Ratio Prot												
v/s Ratio Perm					0.14						0.26	0.19
v/c Ratio					0.63						0.40	0.29
Uniform Delay, d1					24.2						5.6	5.2
Progression Factor					0.79						0.37	0.37
Incremental Delay, d2					3.9						0.7	0.7
Delay (s)					23.1						2.7	2.6
Level of Service					C						A	A
Approach Delay (s)		0.0			23.1			0.0			2.7	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.5	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	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	1109	22	0	0	0	0	0	0	19	326	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									2594	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3112									2594	
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	375	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	1299	0	0	0	0	0	0	0	0	389	0
Heavy Vehicles (%)	0%	4%	10%	2%	2%	2%	2%	2%	2%	0%	19%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		40.0									21.0	
Effective Green, g (s)		40.5									21.5	
Actuated g/C Ratio		0.58									0.31	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1801									797	
v/s Ratio Prot		c0.42										
v/s Ratio Perm											0.15	
v/c Ratio		0.72									0.49	
Uniform Delay, d1		10.7									19.8	
Progression Factor		0.76									1.46	
Incremental Delay, d2		2.2									0.4	
Delay (s)		10.3									29.2	
Level of Service		B									C	
Approach Delay (s)		10.3			0.0			0.0			29.2	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	14.7	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	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1379	374	0	0	0
Ideal Flow (vphpl)	1900	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	1452	394	0	0	0
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	800	0	0	0	0	0	1452	357	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)		18.7						42.8	42.8			
Effective Green, g (s)		18.7						43.3	43.3			
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)		1222						1896	768			
v/s Ratio Prot								c0.47				
v/s Ratio Perm		0.17							0.29			
v/c Ratio		0.65						0.77	0.46			
Uniform Delay, d1		22.8						9.7	7.1			
Progression Factor		0.88						1.92	2.23			
Incremental Delay, d2		1.2						2.7	1.8			
Delay (s)		21.3						21.3	17.8			
Level of Service		C						C	B			
Approach Delay (s)		21.3			0.0			20.5			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	553	411	71	1330	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	73	1371	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	22	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	972	0	0	1439	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								0.49				
v/c Ratio					0.87			0.90				
Uniform Delay, d1					21.6			14.2				
Progression Factor					1.00			0.73				
Incremental Delay, d2					7.9			5.7				
Delay (s)					29.5			16.0				
Level of Service					C			B				
Approach Delay (s)		0.0			29.5			16.0			0.0	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM Average Control Delay	21.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1106	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									4391	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4391	
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	1189	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	58	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1525	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)		12.7									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									3061	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.35	
v/c Ratio		0.56									0.50	
Uniform Delay, d1		25.8									4.9	
Progression Factor		1.00									0.65	
Incremental Delay, d2		1.3									0.5	
Delay (s)		27.1									3.7	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			3.7	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.3%	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	324	291	0	0	0	0	0	1260	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	3276						4414	
Flt Permitted				0.95	0.99						1.00	
Satd. Flow (perm)				1264	3276						4414	
Peak-hour factor, PHF	0.92	0.92	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	316	0	0	0	0	0	1370	68
RTOR Reduction (vph)	0	0	0	26	26	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	192	424	0	0	0	0	0	1432	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)				16.7	16.7						44.3	
Effective Green, g (s)				17.2	17.2						44.8	
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)				311	805						2825	
v/s Ratio Prot				c0.15	0.13						c0.32	
v/s Ratio Perm												
v/c Ratio				0.62	0.53						0.51	
Uniform Delay, d1				23.5	22.9						6.7	
Progression Factor				1.21	1.26						1.00	
Incremental Delay, d2				1.9	0.3						0.7	
Delay (s)				30.3	29.3						7.4	
Level of Service				C	C						A	
Approach Delay (s)		0.0			29.6			0.0			7.4	
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	74.0%	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)	4	1168	36	28	1015	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)		3327		1727	3342		1681	1672			1762	
Flt Permitted		0.95		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3165		1727	3342		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)	5	1374	42	33	1194	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	1420	0	33	1196	0	222	216	0	0	25	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	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)		1939		79	2314		261	259			90	
v/s Ratio Prot				0.02	c0.36		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.45										
v/c Ratio		0.73		0.42	0.52		0.85	0.83			0.28	
Uniform Delay, d1		16.1		54.8	8.7		48.5	48.4			53.9	
Progression Factor		1.00		1.04	0.54		1.00	1.00			1.00	
Incremental Delay, d2		2.5		2.9	0.7		22.4	19.9			1.7	
Delay (s)		18.5		59.9	5.4		70.9	68.3			55.6	
Level of Service		B		E	A		E	E			E	
Approach Delay (s)		18.5			6.8			69.6			55.6	
Approach LOS		B			A			E			E	

Intersection Summary			
HCM Average Control Delay	21.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1505	102	53	1067	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	3311		1727	3343		1665	1552			1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99			0.97	
Satd. Flow (perm)	1727	3311		1727	3343		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	1568	106	55	1111	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	1671	0	55	1111	0	179	101	0	0	85	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	65.3		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	1860		111	1907		219	204			187	
v/s Ratio Prot	0.02	c0.50		0.03	c0.33		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.27	0.90		0.50	0.58		0.82	0.50			0.46	
Uniform Delay, d1	53.4	22.9		53.3	16.3		49.9	47.6			49.5	
Progression Factor	0.76	0.57		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.9	6.2		2.5	1.3		21.0	2.2			2.1	
Delay (s)	41.3	19.2		55.9	17.6		70.9	49.8			51.6	
Level of Service	D	B		E	B		E	D			D	
Approach Delay (s)		19.6			19.4			60.7			51.6	
Approach LOS		B			B			E			D	

Intersection Summary			
HCM Average Control Delay	24.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	799	3	504	727	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		0.94	1.00		0.85
Flt Protected	1.00		0.97	1.00		1.00
Satd. Flow (prot)	3442		3144	1616		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3442		3144	1616		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	986	4	622	898	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	990	0	1035	485	0	377
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)	28.3		31.4	71.7		31.4
Effective Green, g (s)	30.3		33.4	71.7		33.4
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)	1455		1465	1616		1237
v/s Ratio Prot	c0.29		c0.33	0.30		0.14
v/s Ratio Perm						
v/c Ratio	0.68		0.71	0.30		0.30
Uniform Delay, d1	16.8		15.2	0.0		11.9
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	1.2		1.5	0.5		0.1
Delay (s)	18.0		16.7	0.5		12.0
Level of Service	B		B	A		B
Approach Delay (s)	18.0		11.5		12.0	
Approach LOS	B		B		B	

Intersection Summary			
HCM Average Control Delay	13.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	71.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.6%	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

8/12/2009

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	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

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	370	18	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	19	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			408			533	399	399	443	408	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			408			533	399	399	443	408	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	55	99
cM capacity (veh/h)	1604			1161			294	541	653	460	532	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	408	0	88	256
Volume Left	0	0	1	2
Volume Right	19	0	1	15
cSH	1604	1700	536	548
Volume to Capacity	0.00	0.00	0.16	0.47
Queue Length 95th (ft)	0	0	15	62
Control Delay (s)	0.0	0.0	13.0	17.2
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.0	17.2
Approach LOS			B	C

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	503	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	541	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		1147	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1147	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		177	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	544	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	201
Volume to Capacity	0.35	0.00	0.05
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.0	0.1	24.0
Lane LOS		A	C
Approach Delay (s)	0.0	0.1	24.0
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	39.4%	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	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	574	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	586			601			1212	1208	603	1202	1203	581
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	586			601			1212	1208	603	1202	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			100	99	100	94	99	98
cM capacity (veh/h)	974			959			154	182	500	155	178	505

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	587	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	974	959	182	222
Volume to Capacity	0.01	0.00	0.01	0.08
Queue Length 95th (ft)	1	0	0	7
Control Delay (s)	0.2	0.1	24.9	22.7
Lane LOS	A	A	C	C
Approach Delay (s)	0.2	0.1	24.9	22.7
Approach LOS			C	C

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	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	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			602			1176	1176	602	1176	1176	569
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570			602			1176	1176	602	1176	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			99	100	100	99	100	100
cM capacity (veh/h)	988			961			168	191	500	168	191	522

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	603	571	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	988	961	251	254
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	19.5	19.3
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	19.5	19.3
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	468	34	10	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	514	37	11	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			552			1212	1184	535	1184	1197	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			552			1212	1184	535	1184	1197	523
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
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 %	95			99			95	99	100	88	99	94
cM capacity (veh/h)	1021			984			142	179	548	155	174	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	602	537	11	54
Volume Left	51	11	7	19
Volume Right	37	12	2	34
cSH	1021	984	176	286
Volume to Capacity	0.05	0.01	0.06	0.19
Queue Length 95th (ft)	4	1	5	17
Control Delay (s)	1.3	0.3	26.9	20.5
Lane LOS	A	A	D	C
Approach Delay (s)	1.3	0.3	26.9	20.5
Approach LOS			D	C

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	487	0	0	27	488
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	530
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			589	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			589	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)			462	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	529	29	530
Volume Left	0	29	0
Volume Right	529	0	0
cSH	1700	1578	1700
Volume to Capacity	0.31	0.02	0.31
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.4	
Approach LOS			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	500	5	0	16	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	18	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	6.5	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	89	100	100
cM capacity (veh/h)	1585		152	164	168	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	366	189	18
Volume Left	366	183	0
Volume Right	0	5	0
cSH	1585	1585	164
Volume to Capacity	0.35	0.35	0.11
Queue Length 95th (ft)	39	39	9
Control Delay (s)	8.5	8.3	29.5
Lane LOS	A	A	D
Approach Delay (s)	8.4		29.5
Approach LOS			D

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	24.4%	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)	21	3	0	0	169	7	12	492	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	559	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	411	609	0	599	598	291	0			582		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	411	609	0	599	598	291	0			582		
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 %	93	99	100	100	53	99	99			100		
cM capacity (veh/h)	331	409	1091	382	413	709	1600			988		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	293	302
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	339	420	1600	1700
Volume to Capacity	0.08	0.48	0.01	0.18
Queue Length 95th (ft)	7	63	1	0
Control Delay (s)	16.5	21.1	0.4	0.0
Lane LOS	C	C	A	
Approach Delay (s)	16.5	21.1	0.2	
Approach LOS	C	C		

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	37.2%	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)	7	6	0	0	16	2	5	506	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	527	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	284	543	2	545	540	266	0			532		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	284	543	2	545	540	266	0			532		
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 %	99	99	100	100	96	100	100			100		
cM capacity (veh/h)	629	448	1086	419	450	738	1593			1031		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	269	269
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	530	470	1593	1700
Volume to Capacity	0.03	0.04	0.00	0.16
Queue Length 95th (ft)	2	3	0	0
Control Delay (s)	12.0	13.0	0.2	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	13.0	0.1	
Approach LOS	B	B		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	19	470	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	22	547	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	382	605	4	603	601	281	3			557		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	382	605	4	603	601	281	3			557		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.3			2.2		
p0 queue free %	97	98	100	100	72	99	99			100		
cM capacity (veh/h)	385	367	1019	336	369	663	1571			1006		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	295	280
Volume Left	12	0	22	0
Volume Right	0	9	0	7
cSH	378	383	1571	1700
Volume to Capacity	0.05	0.30	0.01	0.16
Queue Length 95th (ft)	4	31	1	0
Control Delay (s)	15.0	18.3	0.7	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.0	18.3	0.3	
Approach LOS	C	C		

Intersection Summary				
Average Delay		3.6		
Intersection Capacity Utilization		31.5%	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	22	0	0	0	0	3	333	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	26	0	0	0	0	4	396	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	0.94	0.94	0.94	0.94	0.94		0.94					
vC, conflicting volume	424	418	206	223	423	7	409			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	269	263	38	56	268	7	253			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	4.1	3.4	2.2			2.3		
p0 queue free %	100	98	100	88	96	100	100			100		
cM capacity (veh/h)	567	572	927	840	586	1055	1232			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	126	202	208
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	619	771	1541	1700
Volume to Capacity	0.03	0.16	0.00	0.12
Queue Length 95th (ft)	2	15	0	0
Control Delay (s)	11.0	10.6	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.0	10.6	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.8		
Intersection Capacity Utilization		30.9%	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	394	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	424	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	461	453	220	245	459	4	437			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	461	453	220	245	459	4	437			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	98	100	100			99		
cM capacity (veh/h)	476	502	790	674	498	1080	1120			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	223	225
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	529	589	1576	1700
Volume to Capacity	0.03	0.05	0.01	0.13
Queue Length 95th (ft)	2	4	1	0
Control Delay (s)	12.0	11.4	0.4	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	11.4	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization		30.2%	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	349	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	371	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	440			0			455	434	222	232	468	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	440			0			455	434	222	232	468	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	94	100	81	91	100
cM capacity (veh/h)	1116			1565			456	514	788	667	489	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	199	255	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	520	611
Volume to Capacity	0.01	0.15	0.06	0.28
Queue Length 95th (ft)	1	0	5	29
Control Delay (s)	0.6	0.0	12.4	13.2
Lane LOS	A		B	B
Approach Delay (s)	0.3		12.4	13.2
Approach LOS			B	B

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	34.3%	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	0	0	0	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	0	0	0	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	49			29			70	78	49	70	70	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	49			29			70	78	49	70	70	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			100	100	100	99	100	100
cM capacity (veh/h)	1558			1584			922	812	1020	908	810	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	49	0	5
Volume Left	0	0	0	5
Volume Right	17	0	0	0
cSH	1558	1584	1700	908
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	0.0	9.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	9.0
Approach LOS			A	A

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	13.3%	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	44	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	48	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	61	48	49			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	48	49			
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)	944	1020	1571			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	49
Volume Left	1	1	0
Volume Right	1	0	1
cSH	981	1571	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

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	437	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	502	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	502			456			1092	1044	454	1052	1049	506
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	502			456			1092	1044	454	1052	1049	506
tC, single (s)	4.2			4.1			7.3	6.7	6.4	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.7	4.2	3.5	3.6	4.1	3.4
p0 queue free %	96			100			88	98	99	97	100	91
cM capacity (veh/h)	1017			1115			157	204	570	186	210	549

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	509	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	1017	1700	1115	1700	191	454
Volume to Capacity	0.04	0.27	0.00	0.30	0.14	0.12
Queue Length 95th (ft)	3	0	0	0	12	10
Control Delay (s)	8.7	0.0	8.2	0.0	27.0	14.0
Lane LOS	A		A		D	B
Approach Delay (s)	0.7		0.1		27.0	14.0
Approach LOS					D	B

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	388	98	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	422	107	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	528			372			943	964	366	960	916	475
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			372			943	964	366	960	916	475
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			96	94	94	73	98	95
cM capacity (veh/h)	999			1144			210	236	653	206	264	592

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	545	65	92
Volume Left	18	16	9	57
Volume Right	11	107	41	29
cSH	999	1144	385	265
Volume to Capacity	0.02	0.01	0.17	0.35
Queue Length 95th (ft)	1	1	15	38
Control Delay (s)	0.6	0.4	16.2	25.7
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	16.2	25.7
Approach LOS			C	D

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	49.8%	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	281	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	316	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	316			326			356	672	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	316			326			356	672	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	90	95	100	100	100
cM capacity (veh/h)	1217			596			591	371	716	485	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	316	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	316	33
cSH	1217	1700	596	1700	481
Volume to Capacity	0.01	0.19	0.01	0.19	0.14
Queue Length 95th (ft)	1	0	1	0	12
Control Delay (s)	8.0	0.0	11.1	0.0	13.7
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.2		13.7
Approach LOS					B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

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	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	52	0	0	41	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	57	0	0	45	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			57		101	57
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			57		101	57
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1548		897	1010

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	57	45	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1548	1700
Volume to Capacity	0.03	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	0	0	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	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)	11	332	4	15	431	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)		1745			1822			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	463	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	510	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)		23.4			23.4			4.3	4.3		4.3	
Effective Green, g (s)		23.9			23.9			4.8	4.8		4.8	
Actuated g/C Ratio		0.65			0.65			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)		1136			1187			187	201		189	
v/s Ratio Prot												
v/s Ratio Perm		0.21			c0.28			0.01	0.00		c0.03	
v/c Ratio		0.33			0.43			0.10	0.02		0.23	
Uniform Delay, d1		2.8			3.1			14.1	13.9		14.3	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.2	0.0		0.6	
Delay (s)		3.0			3.4			14.3	13.9		14.9	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.0			3.4			14.1			14.9	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	36.7	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	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	2	243	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	276	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		484	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					281	
vCu, unblocked vol			220		484	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		667	808

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	2	276	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1355	1700	683
Volume to Capacity	0.12	0.01	0.00	0.16	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.5
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.5
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
400: Simpson Avenue/N Park Street #1012 & Market Street

8/12/2009

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			18.0	
Level of Service		A						C			B	
Approach Delay (s)		3.7			0.0			29.1			18.0	
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	357	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						3459				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3459				
Peak-hour factor, PHF	0.92	0.92	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	388	9	0	0	0
RTOR Reduction (vph)	54	1	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	54	946	0	0	0	0	0	395	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	18.6	18.6						10.3				
Effective Green, g (s)	19.6	19.6						11.3				
Actuated g/C Ratio	0.50	0.50						0.29				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	883	1674						1005				
v/s Ratio Prot		c0.28						c0.11				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.56						0.39				
Uniform Delay, d1	4.9	6.7						11.1				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.4						0.3				
Delay (s)	5.0	7.1						11.3				
Level of Service	A	A						B				
Approach Delay (s)		6.9			0.0			11.3			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	38.9	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)	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	204	0
Ideal Flow (vphpl)	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	1403	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2887							1289	1681	1403	
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	215	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	178	12	0
Lane Group Flow (vph)	0	969	0	0	0	0	0	0	4	77	252	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	c0.18	
v/s Ratio Perm												
v/c Ratio		0.81							0.02	0.17	0.67	
Uniform Delay, d1		18.0							25.8	19.5	22.7	
Progression Factor		1.09							1.00	1.00	1.00	
Incremental Delay, d2		5.5							0.2	0.8	8.9	
Delay (s)		25.1							26.0	20.4	31.7	
Level of Service		C							C	C	C	
Approach Delay (s)		25.1			0.0			26.0			26.1	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	25.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
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)	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						30.5		13.2	14.7	
Level of Service		C						C		B	B	
Approach Delay (s)		23.6			0.0			30.5			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	498	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	553	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	343	0	553	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)		28.6		28.6		
Effective Green, g (s)		28.6		28.6		
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)		1324		1560		
v/s Ratio Prot		0.19		c0.26		
v/s Ratio Perm						
v/c Ratio		0.26		0.35		
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	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	38.7	Sum of lost time (s)	10.1
Intersection Capacity Utilization	36.9%	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	882	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	919	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	82	0
Lane Group Flow (vph)	0	0	0	0	955	0	0	189	0	0	265	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)					49.2			11.8			11.8	
Effective Green, g (s)					49.7			12.3			12.3	
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)					2478			534			526	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.27			0.06				
v/c Ratio					0.39			0.35			0.50	
Uniform Delay, d1					4.1			25.4			26.1	
Progression Factor					1.33			1.04			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					5.8			26.7			26.9	
Level of Service					A			C			C	
Approach Delay (s)		0.0			5.8			26.7			26.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
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)	0	0	0	14	1184	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	1260	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	52
Lane Group Flow (vph)	0	0	0	0	1293	0	0	419	0	0	54	238
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	0.54
Uniform Delay, d1					8.5			24.8			19.2	21.8
Progression Factor					0.59			1.00			1.00	1.00
Incremental Delay, d2					1.4			26.1			0.5	4.8
Delay (s)					6.4			50.8			19.7	26.6
Level of Service					A			D			B	C
Approach Delay (s)		0.0			6.4			50.8			25.5	
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	81.4%	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)	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	418	18	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		1603	1613				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1603	1613				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	470	20	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	161	161	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1304	0	83	85	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					25.6		8.8	8.8				0.6
Effective Green, g (s)					26.6		9.8	9.8				1.6
Actuated g/C Ratio					0.53		0.20	0.20				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)					1788		314	316				52
v/s Ratio Prot					c0.39							
v/s Ratio Perm							0.05	0.05				c0.00
v/c Ratio					0.73		0.26	0.27				0.00
Uniform Delay, d1					8.9		17.0	17.1				23.4
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.5		0.5	0.5				0.0
Delay (s)					10.5		17.5	17.5				23.5
Level of Service					B		B	B				C
Approach Delay (s)		0.0			10.5			17.5			23.5	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.8%	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	1176	177	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	1238	186	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	1238				1238	619
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1238				1238	619
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	79
cM capacity (veh/h)	558				165	427

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	619	619	186	89
Volume Left	0	0	0	0
Volume Right	0	0	186	89
cSH	1700	1700	1700	427
Volume to Capacity	0.36	0.36	0.11	0.21
Queue Length 95th (ft)	0	0	0	20
Control Delay (s)	0.0	0.0	0.0	15.7
Lane LOS				C
Approach Delay (s)	0.0			15.7
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	462	1031	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)	476	1063	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			476	476	476	1539	1539	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			476	476	476	1539	1539	
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	13	100	
cM capacity (veh/h)			488	589	499	115	432	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	831	709	8	101
Volume Left	0	0	8	0
Volume Right	354	709	0	0
cSH	1700	1700	499	115
Volume to Capacity	0.49	0.42	0.02	0.87
Queue Length 95th (ft)	0	0	1	133
Control Delay (s)	0.0	0.0	12.3	122.3
Lane LOS			B	F
Approach Delay (s)	0.0		114.0	
Approach LOS			F	

Intersection Summary			
Average Delay	7.6		
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	52	0	0	1151	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	1251	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	57	0	0	1251	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			45.7		68.0
Effective Green, g (s)	13.8			46.2		68.0
Actuated g/C Ratio	0.20			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	359			2381		2787
v/s Ratio Prot	0.03			c0.36		
v/s Ratio Perm						c0.18
v/c Ratio	0.16			0.53		0.18
Uniform Delay, d1	22.3			5.4		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.8		0.1
Delay (s)	22.4			6.2		0.1
Level of Service	C			A		A
Approach Delay (s)	22.4			6.2	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	43.5%	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	590	561	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)			701	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	615	584	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	615	584	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)			48.9	53.4	25.3	
Effective Green, g (s)			49.9	53.9	25.8	
Actuated g/C Ratio			0.73	0.79	0.38	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			866	1462	1315	
v/s Ratio Prot			c0.25	0.32	0.15	
v/s Ratio Perm			c0.27			
v/c Ratio			0.71	0.40	0.39	
Uniform Delay, d1			4.2	2.1	15.4	
Progression Factor			0.40	0.08	1.00	
Incremental Delay, d2			2.0	0.7	0.1	
Delay (s)			3.7	0.9	15.5	
Level of Service			A	A	B	
Approach Delay (s)	0.0			2.3	15.5	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	18.1
Intersection Capacity Utilization	53.4%	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)	966	222	0	0	0	22	0	338	133	0	0	0
Ideal Flow (vphpl)	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		0.96				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1618	1663				1277		2562				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1618	1663				1277		2562				
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	363	143	0	0	0
RTOR Reduction (vph)	261	62	0	0	0	24	0	56	0	0	0	0
Lane Group Flow (vph)	373	582	0	0	0	0	0	451	0	0	0	0
Heavy Vehicles (%)	6%	4%	2%	0%	0%	3%	0%	13%	19%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	38.4	38.4				1.9		17.7				
Effective Green, g (s)	38.9	38.9				0.9		18.2				
Actuated g/C Ratio	0.56	0.56				0.01		0.26				
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)	899	924				16		666				
v/s Ratio Prot								c0.18				
v/s Ratio Perm	0.23	0.35				c0.00						
v/c Ratio	0.41	0.63				0.02		0.68				
Uniform Delay, d1	9.0	10.6				34.1		23.3				
Progression Factor	0.72	0.20				1.00		1.00				
Incremental Delay, d2	0.9	2.2				0.2		2.7				
Delay (s)	7.4	4.3				34.3		26.0				
Level of Service	A	A				C		C				
Approach Delay (s)		5.8			34.3			26.0			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
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	22	0	0	161	18	34	1299	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			4886				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1272			1631			4886				
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	169	19	36	1367	6	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	40	0	0	179	0	0	1409	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	16%	5%	5%	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)		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			3378				
v/s Ratio Prot					c0.11							
v/s Ratio Perm		0.03						0.29				
v/c Ratio		0.16			0.57			0.42				
Uniform Delay, d1		23.5			25.5			4.7				
Progression Factor		1.07			1.00			0.67				
Incremental Delay, d2		0.3			2.3			0.3				
Delay (s)		25.5			27.8			3.4				
Level of Service		C			C			A				
Approach Delay (s)		25.5			27.8			3.4			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.8	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	48.0%	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)	92	147	0	0	83	116	53	1376	86	0	0	0
Ideal Flow (vphpl)	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		4520				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1240			1712	1504		4520				
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	87	122	56	1448	91	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	30	0	9	0	0	0	0
Lane Group Flow (vph)	0	252	0	0	96	68	0	1586	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	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)		319			440	387		2841				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.04		0.35				
v/c Ratio		0.79			0.22	0.17		0.56				
Uniform Delay, d1		24.2			20.5	20.2		7.4				
Progression Factor		0.97			1.00	1.00		2.20				
Incremental Delay, d2		11.7			0.3	0.2		0.8				
Delay (s)		35.1			20.7	20.4		17.1				
Level of Service		D			C	C		B				
Approach Delay (s)		35.1			20.6			17.1			0.0	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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)	78	31	0	0	73	32	28	1371	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			4379				
Flt Permitted		0.70			1.00			1.00				
Satd. Flow (perm)		1310			1786			4379				
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	1576	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	25	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	126	0	0	96	0	0	1657	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			3115				
v/s Ratio Prot					0.05							
v/s Ratio Perm		c0.10						0.38				
v/c Ratio		0.55			0.31			0.53				
Uniform Delay, d1		26.4			25.2			4.7				
Progression Factor		1.61			1.00			0.28				
Incremental Delay, d2		2.8			0.6			0.6				
Delay (s)		45.3			25.8			1.9				
Level of Service		D			C			A				
Approach Delay (s)		45.3			25.8			1.9			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.3	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	47.3%	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)	238	26	0	0	32	18	43	1561	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			4389				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1057			1418			4389				
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	46	1661	23	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	281	0	0	40	0	0	1728	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)		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			2558				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.27						0.39				
v/c Ratio		0.88			0.09			0.68				
Uniform Delay, d1		23.2			17.5			10.0				
Progression Factor		0.67			1.00			0.66				
Incremental Delay, d2		22.4			0.1			1.3				
Delay (s)		37.9			17.6			7.9				
Level of Service		D			B			A				
Approach Delay (s)		37.9			17.6			7.9			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	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	54	15	0	0	8	10	23	1532	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			4394				
Flt Permitted		0.76			1.00			1.00				
Satd. Flow (perm)		1132			1380			4394				
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	1741	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	1784	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			3308				
v/s Ratio Prot					0.01							
v/s Ratio Perm		c0.07						0.41				
v/c Ratio		0.52			0.06			0.54				
Uniform Delay, d1		28.3			26.5			3.6				
Progression Factor		0.82			1.00			0.29				
Incremental Delay, d2		3.1			0.1			0.5				
Delay (s)		26.4			26.7			1.5				
Level of Service		C			C			A				
Approach Delay (s)		26.4			26.7			1.5			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	2.8	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	47.5%	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	1328	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						4425	
Flt Permitted		1.00			0.79						1.00	
Satd. Flow (perm)		1410			1184						4425	
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	1476	41
RTOR Reduction (vph)	0	33	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	72	0	0	79	0	0	0	0	0	1534	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						3344	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.07						0.35	
v/c Ratio		0.39			0.51						0.46	
Uniform Delay, d1		27.9			28.4						3.2	
Progression Factor		1.00			0.92						0.69	
Incremental Delay, d2		1.4			2.8						0.4	
Delay (s)		29.3			29.0						2.6	
Level of Service		C			C						A	
Approach Delay (s)		29.3			29.0			0.0			2.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.0%	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	148	36	25	57	0	0	0	0	9	1184	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)		1451			1468						4403	
Flt Permitted		1.00			0.87						1.00	
Satd. Flow (perm)		1451			1300						4403	
Peak-hour factor, PHF	0.92	0.92	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	39	27	62	0	0	0	0	10	1287	86
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	185	0	0	89	0	0	0	0	0	1376	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)		14.1			14.1						45.9	
Effective Green, g (s)		14.6			14.6						47.4	
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)		303			271						2981	
v/s Ratio Prot		c0.13										
v/s Ratio Perm					0.07						0.31	
v/c Ratio		0.61			0.33						0.46	
Uniform Delay, d1		25.1			23.5						5.3	
Progression Factor		1.00			1.03						0.26	
Incremental Delay, d2		3.6			0.7						0.5	
Delay (s)		28.7			25.0						1.9	
Level of Service		C			C						A	
Approach Delay (s)		28.7			25.0			0.0			1.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
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	77	21	16	45	0	0	0	0	19	1199	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						4429	
Flt Permitted		1.00			0.90						1.00	
Satd. Flow (perm)		1447			1340						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	84	23	17	49	0	0	0	0	21	1303	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	1350	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						3347	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.05						0.30	
v/c Ratio		0.48			0.38						0.40	
Uniform Delay, d1		28.2			27.9						3.0	
Progression Factor		1.00			0.58						0.24	
Incremental Delay, d2		1.9			1.3						0.3	
Delay (s)		30.1			17.5						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.1			17.5			0.0			1.0	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	3.8	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	40.7%	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	106	15	58	74	0	0	0	0	133	1060	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			1823						4568	
Flt Permitted		1.00			0.83						0.99	
Satd. Flow (perm)		1831			1555						4568	
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	16	61	78	0	0	0	0	140	1116	33
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	121	0	0	139	0	0	0	0	0	1285	0
Heavy Vehicles (%)	2%	2%	2%	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)		536			455						2708	
v/s Ratio Prot		0.07										
v/s Ratio Perm					c0.09						0.28	
v/c Ratio		0.23			0.31						0.47	
Uniform Delay, d1		18.7			19.2						8.1	
Progression Factor		1.00			0.93						0.85	
Incremental Delay, d2		1.0			1.7						0.6	
Delay (s)		19.7			19.5						7.4	
Level of Service		B			B						A	
Approach Delay (s)		19.7			19.5			0.0			7.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.5	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	47.5%	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	28	154	0	0	0	0	22	344	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						0.92	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1322						2496	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1322						2496	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	164	0	0	0	0	23	366	830
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	144	144
Lane Group Flow (vph)	0	0	0	0	194	0	0	0	0	0	660	271
Heavy Vehicles (%)	2%	2%	2%	64%	5%	2%	2%	2%	2%	0%	13%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					15.8						45.2	45.2
Effective Green, g (s)					16.3						45.7	45.7
Actuated g/C Ratio					0.23						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)					308						1630	914
v/s Ratio Prot												
v/s Ratio Perm					0.15						0.26	0.19
v/c Ratio					0.63						0.40	0.30
Uniform Delay, d1					24.1						5.7	5.2
Progression Factor					0.80						0.37	0.42
Incremental Delay, d2					3.9						0.7	0.8
Delay (s)					23.2						2.8	2.9
Level of Service					C						A	A
Approach Delay (s)		0.0			23.2			0.0			2.9	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.6	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	48.5%	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	1131	23	0	0	0	0	0	0	19	332	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)		3111									2594	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3111									2594	
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	26	0	0	0	0	0	0	22	382	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	1325	0	0	0	0	0	0	0	0	396	0
Heavy Vehicles (%)	0%	4%	10%	2%	2%	2%	2%	2%	2%	0%	19%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		40.0									21.0	
Effective Green, g (s)		40.5									21.5	
Actuated g/C Ratio		0.58									0.31	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1800									797	
v/s Ratio Prot		c0.43										
v/s Ratio Perm											0.15	
v/c Ratio		0.74									0.50	
Uniform Delay, d1		10.8									19.8	
Progression Factor		0.76									1.45	
Incremental Delay, d2		2.4									0.4	
Delay (s)		10.6									29.2	
Level of Service		B									C	
Approach Delay (s)		10.6			0.0			0.0			29.2	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	14.9	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	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)	120	670	0	0	0	0	0	1406	381	0	0	0
Ideal Flow (vphpl)	1900	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	1480	401	0	0	0
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	36	0	0	0
Lane Group Flow (vph)	0	816	0	0	0	0	0	1480	365	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)		19.3						42.2	42.2			
Effective Green, g (s)		19.3						42.7	42.7			
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)		1262						1870	758			
v/s Ratio Prot								c0.48				
v/s Ratio Perm		0.18							0.29			
v/c Ratio		0.65						0.79	0.48			
Uniform Delay, d1		22.3						10.3	7.5			
Progression Factor		0.89						1.88	2.16			
Incremental Delay, d2		1.1						3.1	1.9			
Delay (s)		20.9						22.5	18.2			
Level of Service		C						C	B			
Approach Delay (s)		20.9			0.0			21.6			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.9%	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)	0	0	0	0	564	419	73	1356	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	581	432	75	1398	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	21	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	992	0	0	1468	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)					23.5			37.5				
Effective Green, g (s)					24.0			38.0				
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)					1116			1598				
v/s Ratio Prot					c0.30							
v/s Ratio Perm								0.50				
v/c Ratio					0.89			0.92				
Uniform Delay, d1					21.7			14.6				
Progression Factor					1.00			0.75				
Incremental Delay, d2					8.9			6.6				
Delay (s)					30.6			17.6				
Level of Service					C			B				
Approach Delay (s)		0.0			30.6			17.6			0.0	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM Average Control Delay	22.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	275	43	0	0	0	0	0	0	373	1128	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									4391	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4391	
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	46	0	0	0	0	0	0	401	1213	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	58	0
Lane Group Flow (vph)	0	320	0	0	0	0	0	0	0	0	1556	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)		12.8									48.2	
Effective Green, g (s)		13.3									48.7	
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)		560									3055	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.35	
v/c Ratio		0.57									0.51	
Uniform Delay, d1		25.8									5.0	
Progression Factor		1.00									0.65	
Incremental Delay, d2		1.4									0.5	
Delay (s)		27.2									3.8	
Level of Service		C									A	
Approach Delay (s)		27.2			0.0			0.0			3.8	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.9	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	45.0%	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	330	297	0	0	0	0	0	1285	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	0.99						1.00	
Satd. Flow (prot)				1264	3276						4414	
Flt Permitted				0.95	0.99						1.00	
Satd. Flow (perm)				1264	3276						4414	
Peak-hour factor, PHF	0.92	0.92	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	359	323	0	0	0	0	0	1397	70
RTOR Reduction (vph)	0	0	0	24	24	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	199	435	0	0	0	0	0	1461	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)				17.0	17.0						44.0	
Effective Green, g (s)				17.5	17.5						44.5	
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)				316	819						2806	
v/s Ratio Prot				c0.16	0.13						c0.33	
v/s Ratio Perm												
v/c Ratio				0.63	0.53						0.52	
Uniform Delay, d1				23.4	22.7						6.9	
Progression Factor				1.19	1.25						1.00	
Incremental Delay, d2				2.0	0.3						0.7	
Delay (s)				29.8	28.6						7.6	
Level of Service				C	C						A	
Approach Delay (s)		0.0			29.0			0.0			7.6	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

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)	4	1192	37	28	1035	2	356	9	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)		3327		1727	3342		1681	1673			1762	
Flt Permitted		0.95		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3164		1727	3342		1681	1673			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)	5	1402	44	33	1218	2	419	11	21	20	5	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	1450	0	33	1220	0	226	222	0	0	25	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	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)		71.2		5.4	80.6		17.4	17.4			5.0	
Effective Green, g (s)		72.2		5.4	81.6		18.4	18.4			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)		1936		79	2311		262	261			90	
v/s Ratio Prot				0.02	c0.37		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.46										
v/c Ratio		0.75		0.42	0.53		0.86	0.85			0.28	
Uniform Delay, d1		16.4		54.8	8.8		48.6	48.4			53.9	
Progression Factor		1.00		1.04	0.56		1.00	1.00			1.00	
Incremental Delay, d2		2.7		2.8	0.7		24.1	21.8			1.7	
Delay (s)		19.1		59.6	5.6		72.7	70.3			55.6	
Level of Service		B		E	A		E	E			E	
Approach Delay (s)		19.1			7.0			71.5			55.6	
Approach LOS		B			A			E			E	

Intersection Summary			
HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	1535	104	54	1088	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	3311		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	3311		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	1599	108	56	1133	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	1704	0	56	1133	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	1852		113	1901		220	205			188	
v/s Ratio Prot	0.02	c0.51		0.03	c0.34		c0.11	0.07			c0.05	
v/s Ratio Perm												
v/c Ratio	0.28	0.92		0.50	0.60		0.83	0.52			0.47	
Uniform Delay, d1	53.4	23.6		53.3	16.6		49.9	47.7			49.5	
Progression Factor	0.77	0.58		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.9	7.5		2.5	1.4		23.2	2.7			2.1	
Delay (s)	42.3	21.2		55.8	18.0		73.1	50.4			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		21.5			19.8			62.1			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	815	3	514	741	0	311
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		3144	1616		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3442		3144	1616		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1006	4	635	915	0	384
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1010	0	1056	494	0	384
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)	29.2		32.1	73.3		32.1
Effective Green, g (s)	31.2		34.1	73.3		34.1
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)	1465		1463	1616		1236
v/s Ratio Prot	c0.29		c0.34	0.31		0.14
v/s Ratio Perm						
v/c Ratio	0.69		0.72	0.31		0.31
Uniform Delay, d1	17.1		15.8	0.0		12.3
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	1.3		1.7	0.5		0.1
Delay (s)	18.4		17.5	0.5		12.4
Level of Service	B		B	A		B
Approach Delay (s)	18.4		12.0		12.4	
Approach LOS	B		B		B	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	73.3	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			

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	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

8/17/2009

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

8/17/2009

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	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	2	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	833	828	356	733	923	461	453			462		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	833	828	356	733	923	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	100			100		
cM capacity (veh/h)	282	308	692	322	260	582	1118			1110		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	462	2	453
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	193
cSH	307	344	1118	1700	1110	1700
Volume to Capacity	0.08	0.03	0.00	0.27	0.00	0.27
Queue Length 95th (ft)	7	2	0	0	0	0
Control Delay (s)	17.8	15.8	8.2	0.0	8.3	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	17.8	15.8	0.0		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	0.7		
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	18	0	0	0	1	83	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	19	0	0	0	1	87	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			417			544	407	407	452	417	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			417			544	407	407	452	417	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			1153			283	535	646	452	527	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	417	0	89	261
Volume Left	0	0	1	2
Volume Right	19	0	1	15
cSH	1604	1700	530	542
Volume to Capacity	0.00	0.00	0.17	0.48
Queue Length 95th (ft)	0	0	15	65
Control Delay (s)	0.0	0.0	13.2	17.7
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	13.2	17.7
Approach LOS			B	C

Intersection Summary			
Average Delay	7.5		
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)	568	1	3	513	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)	611	1	3	552	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			612		1169	611
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			612		1169	611
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		94	99
cM capacity (veh/h)			939		171	416

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	612	555	12
Volume Left	0	3	10
Volume Right	1	0	2
cSH	1700	939	192
Volume to Capacity	0.36	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	25.0
Lane LOS		A	C
Approach Delay (s)	0.0	0.1	25.0
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	40.0%	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)	9	561	0	2	539	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	610	0	2	586	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	598			613			1239	1234	615	1229	1229	593
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	598			613			1239	1234	615	1229	1229	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			100			100	99	100	93	99	98
cM capacity (veh/h)	964			950			147	175	493	149	172	497

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	620	599	1	21
Volume Left	10	2	0	10
Volume Right	0	11	0	9
cSH	964	950	175	215
Volume to Capacity	0.01	0.00	0.01	0.10
Queue Length 95th (ft)	1	0	0	8
Control Delay (s)	0.3	0.1	25.7	23.5
Lane LOS	A	A	D	C
Approach Delay (s)	0.3	0.1	25.7	23.5
Approach LOS			D	C

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	564	1	1	534	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	613	1	1	580	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	582			614			1200	1199	614	1200	1199	581
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	582			614			1200	1199	614	1200	1199	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			100			99	100	100	99	100	100
cM capacity (veh/h)	978			951			161	185	492	161	185	514

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	615	583	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	978	951	243	245
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	20.0	19.8
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	20.0	19.8
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	40.5%	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)	47	477	35	10	477	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	524	38	11	524	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	538			563			1235	1207	545	1206	1220	533
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	538			563			1235	1207	545	1206	1220	533
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
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 %	95			99			95	99	100	88	99	94
cM capacity (veh/h)	1013			975			137	173	541	150	169	545

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	614	547	11	54
Volume Left	52	11	7	19
Volume Right	38	12	2	34
cSH	1013	975	170	278
Volume to Capacity	0.05	0.01	0.06	0.19
Queue Length 95th (ft)	4	1	5	18
Control Delay (s)	1.3	0.3	27.7	21.0
Lane LOS	A	A	D	C
Approach Delay (s)	1.3	0.3	27.7	21.0
Approach LOS			D	C

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	497	0	0	27	498
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	541
Pedestrians						
Lane Width (ft)						
Walking Speed (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	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600	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)			455	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	540	29	541
Volume Left	0	29	0
Volume Right	540	0	0
cSH	1700	1578	1700
Volume to Capacity	0.32	0.02	0.32
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.4	
Approach LOS			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	510	5	0	16	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	18	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	89	100	100
cM capacity (veh/h)	1585		146	158	162	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	374	192	18
Volume Left	374	187	0
Volume Right	0	5	0
cSH	1585	1585	158
Volume to Capacity	0.35	0.35	0.11
Queue Length 95th (ft)	41	41	9
Control Delay (s)	8.5	8.4	30.5
Lane LOS	A	A	D
Approach Delay (s)	8.5		30.5
Approach LOS			D

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	24.7%	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)	22	3	0	0	172	8	12	502	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	570	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	419	622	0	611	610	297	0			594		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	419	622	0	611	610	297	0			594		
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 %	92	99	100	100	52	99	99			100		
cM capacity (veh/h)	319	402	1091	375	406	702	1600			978		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	28	205	299	309
Volume Left	25	0	14	0
Volume Right	0	9	0	24
cSH	327	414	1600	1700
Volume to Capacity	0.09	0.49	0.01	0.18
Queue Length 95th (ft)	7	66	1	0
Control Delay (s)	17.0	21.9	0.4	0.0
Lane LOS	C	C	A	
Approach Delay (s)	17.0	21.9	0.2	
Approach LOS	C	C		

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	37.8%	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)	8	6	0	0	16	2	5	516	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	538	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	290	553	2	556	551	271	0			543		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	290	553	2	556	551	271	0			543		
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 %	99	99	100	100	96	100	100			100		
cM capacity (veh/h)	624	442	1086	412	444	733	1593			1022		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	15	19	274	274
Volume Left	8	0	5	0
Volume Right	0	2	0	5
cSH	530	464	1593	1700
Volume to Capacity	0.03	0.04	0.00	0.16
Queue Length 95th (ft)	2	3	0	0
Control Delay (s)	12.0	13.1	0.2	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	13.1	0.1	
Approach LOS	B	B		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	29.0%	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)	10	6	0	0	92	9	19	480	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	22	558	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	390	616	4	614	613	287	3			569		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	390	616	4	614	613	287	3			569		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.3			2.2		
p0 queue free %	97	98	100	100	71	98	99			100		
cM capacity (veh/h)	375	362	1019	329	363	657	1571			996		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	117	301	286
Volume Left	12	0	22	0
Volume Right	0	10	0	7
cSH	370	378	1571	1700
Volume to Capacity	0.05	0.31	0.01	0.17
Queue Length 95th (ft)	4	32	1	0
Control Delay (s)	15.3	18.7	0.7	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.3	18.7	0.3	
Approach LOS	C	C		

Intersection Summary				
Average Delay		3.7		
Intersection Capacity Utilization		31.7%	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	86	23	0	0	0	0	3	340	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	4	102	27	0	0	0	0	4	405	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	0.94	0.94	0.94	0.94	0.94		0.94					
vC, conflicting volume	434	427	211	227	433	7	418			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	271	263	33	51	269	7	254			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	4.1	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	95	100	100			100		
cM capacity (veh/h)	563	569	931	844	583	1055	1227			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	130	206	213
Volume Left	0	102	4	0
Volume Right	4	0	0	11
cSH	617	772	1541	1700
Volume to Capacity	0.03	0.17	0.00	0.13
Queue Length 95th (ft)	2	15	0	0
Control Delay (s)	11.0	10.6	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.0	10.6	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.8		
Intersection Capacity Utilization		31.3%	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	402	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	432	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	469	461	225	249	468	4	445			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	469	461	225	249	468	4	445			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	98	100	100			99		
cM capacity (veh/h)	469	496	785	669	492	1080	1111			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	227	229
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	524	584	1576	1700
Volume to Capacity	0.03	0.05	0.01	0.13
Queue Length 95th (ft)	2	4	1	0
Control Delay (s)	12.1	11.5	0.4	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.1	11.5	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization		30.4%	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	356	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	379	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	449			0			464	441	226	236	477	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	449			0			464	441	226	236	477	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	94	100	80	91	100
cM capacity (veh/h)	1108			1565			449	509	783	662	484	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	203	260	33	176
Volume Left	14	0	0	131
Volume Right	0	70	1	0
cSH	1565	1700	514	605
Volume to Capacity	0.01	0.15	0.06	0.29
Queue Length 95th (ft)	1	0	5	30
Control Delay (s)	0.6	0.0	12.5	13.4
Lane LOS	A		B	B
Approach Delay (s)	0.2		12.5	13.4
Approach LOS			B	B

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	34.7%	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	0	0	0	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	0	0	0	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	49			29			70	78	49	70	70	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	49			29			70	78	49	70	70	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			100	100	100	99	100	100
cM capacity (veh/h)	1558			1584			922	812	1020	908	810	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	49	0	5
Volume Left	0	0	0	5
Volume Right	17	0	0	0
cSH	1558	1584	1700	908
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	0.0	9.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	9.0
Approach LOS			A	A

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	13.3%	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	44	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	48	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	61	48	49			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	48	49			
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)	944	1020	1571			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	49
Volume Left	1	1	0
Volume Right	1	0	1
cSH	981	1571	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

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	35	400	4	4	446	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	460	5	5	513	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	513			464			1114	1064	462	1073	1070	516
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	513			464			1114	1064	462	1073	1070	516
tC, single (s)	4.2			4.1			7.3	6.7	6.4	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.7	4.2	3.5	3.6	4.1	3.4
p0 queue free %	96			100			88	98	99	97	100	91
cM capacity (veh/h)	1008			1108			150	198	564	180	204	542

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	40	464	5	520	28	55
Volume Left	40	0	5	0	18	6
Volume Right	0	5	0	7	6	49
cSH	1008	1700	1108	1700	184	448
Volume to Capacity	0.04	0.27	0.00	0.31	0.15	0.12
Queue Length 95th (ft)	3	0	0	0	13	10
Control Delay (s)	8.7	0.0	8.3	0.0	28.0	14.2
Lane LOS	A		A		D	B
Approach Delay (s)	0.7		0.1		28.0	14.2
Approach LOS					D	B

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	41.3%	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)	17	339	10	15	396	100	9	14	39	53	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	368	11	16	430	109	10	15	42	58	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	539			379			961	983	374	978	934	485
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	539			379			961	983	374	978	934	485
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	93	71	97	95
cM capacity (veh/h)	990			1137			204	230	646	199	258	584

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	398	555	67	93
Volume Left	18	16	10	58
Volume Right	11	109	42	29
cSH	990	1137	375	257
Volume to Capacity	0.02	0.01	0.18	0.36
Queue Length 95th (ft)	1	1	16	40
Control Delay (s)	0.6	0.4	16.7	26.9
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	16.7	26.9
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	50.4%	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	293	2	4	0	287	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	329	2	4	0	322	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	322			331			362	684	330	411	363	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	322			331			362	684	330	411	363	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	90	95	100	100	100
cM capacity (veh/h)	1210			591			586	365	711	480	555	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	331	4	322	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	322	33
cSH	1210	1700	591	1700	475
Volume to Capacity	0.01	0.19	0.01	0.19	0.14
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.0	0.0	11.1	0.0	13.9
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.2		13.9
Approach LOS					B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

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

8/17/2009

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	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	53	0	0	42	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	58	0	0	46	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			58		103	58
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			58		103	58
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1547		895	1009

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	58	46	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1547	1700
Volume to Capacity	0.03	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	0	0	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	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)	11	339	4	15	439	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)		1770			1844			1761	1538		1749	
Flt Permitted		0.98			0.99			0.80	1.00		0.81	
Satd. Flow (perm)		1745			1823			1443	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	365	4	16	472	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	381	0	0	519	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)		23.6			23.6			4.3	4.3		4.3	
Effective Green, g (s)		24.1			24.1			4.8	4.8		4.8	
Actuated g/C Ratio		0.65			0.65			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)		1140			1191			188	200		189	
v/s Ratio Prot												
v/s Ratio Perm		0.22			c0.28			0.01	0.00		c0.03	
v/c Ratio		0.33			0.44			0.11	0.02		0.24	
Uniform Delay, d1		2.8			3.1			14.2	14.0		14.4	
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			14.4	14.0		15.1	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.0			3.4			14.2			15.1	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	36.9	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	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	183	15	2	248	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)	208	17	2	282	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			225		494	208
vC1, stage 1 conf vol					208	
vC2, stage 2 conf vol					286	
vCu, unblocked vol			225		494	208
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)			1350		662	803

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	208	17	2	282	25
Volume Left	0	0	2	0	22
Volume Right	0	17	0	0	3
cSH	1700	1700	1350	1700	678
Volume to Capacity	0.12	0.01	0.00	0.17	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	7.7	0.0	10.5
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.5
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	121	1231	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	1324	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	1466	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			17.7	
Level of Service		A						C			B	
Approach Delay (s)		3.8			0.0			29.1			17.7	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
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	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	364	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						3458				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3323						3458				
Peak-hour factor, PHF	0.92	0.92	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	396	10	0	0	0
RTOR Reduction (vph)	54	1	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	56	964	0	0	0	0	0	403	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	19.1	19.1						10.5				
Effective Green, g (s)	20.1	20.1						11.5				
Actuated g/C Ratio	0.51	0.51						0.29				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	889	1687						1004				
v/s Ratio Prot		c0.29						c0.12				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.57						0.40				
Uniform Delay, d1	5.0	6.8						11.3				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.5						0.3				
Delay (s)	5.0	7.2						11.6				
Level of Service	A	A						B				
Approach Delay (s)		7.0			0.0			11.6			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	39.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1098	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	1181	76	0	0	0	0	29	187	45	34	0
RTOR Reduction (vph)	0	0	9	0	0	0	0	44	44	0	0	0
Lane Group Flow (vph)	0	1199	67	0	0	0	0	65	63	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		c0.41						0.04				
v/s Ratio Perm			0.05						0.04		c0.06	
v/c Ratio		0.54	0.07					0.34	0.35		0.48	
Uniform Delay, d1		3.3	2.0					28.3	28.3		28.7	
Progression Factor		0.30	0.29					1.00	1.00		1.00	
Incremental Delay, d2		0.9	0.1					1.1	1.2		2.1	
Delay (s)		1.8	0.7					29.4	29.5		30.9	
Level of Service		A	A					C	C		C	
Approach Delay (s)		1.8			0.0			29.4			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	0.53		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.0%	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	1068	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)		2882						1314			1459	
Flt Permitted		1.00						1.00			0.86	
Satd. Flow (perm)		2882						1314			1276	
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	1124	26	0	0	0	0	13	93	8	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	53	0	0	0	0
Lane Group Flow (vph)	0	1174	0	0	0	0	0	53	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)		54.6						7.4			7.4	
Effective Green, g (s)		54.6						7.4			7.4	
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)		2248						139			135	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.41									0.01	
v/c Ratio		0.52						0.38			0.14	
Uniform Delay, d1		2.9						29.2			28.4	
Progression Factor		0.36						1.00			1.00	
Incremental Delay, d2		0.6						1.8			0.5	
Delay (s)		1.6						30.9			28.9	
Level of Service		A						C			C	
Approach Delay (s)		1.6			0.0			30.9			28.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	924	16	0	0	0	0	0	29	294	208	0
Ideal Flow (vphpl)	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	1403	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2887							1289	1681	1403	
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	973	17	0	0	0	0	0	31	309	219	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	176	11	0
Lane Group Flow (vph)	0	988	0	0	0	0	0	0	4	84	257	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)		28.7							9.5	18.3	18.3	
Effective Green, g (s)		29.2							10.0	18.8	18.8	
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)		1204							184	451	377	
v/s Ratio Prot		c0.34							c0.00	0.05	c0.18	
v/s Ratio Perm												
v/c Ratio		0.82							0.02	0.19	0.68	
Uniform Delay, d1		18.1							25.8	19.7	22.9	
Progression Factor		1.11							1.00	1.00	1.00	
Incremental Delay, d2		5.9							0.2	0.9	9.6	
Delay (s)		25.9							26.0	20.6	32.5	
Level of Service		C							C	C	C	
Approach Delay (s)		25.9			0.0			26.0			26.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	26.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.0%	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	391	12	0	0	0	0	45	26	469	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	416	13	0	0	0	0	48	28	499	51	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	25	0	0	0	0
Lane Group Flow (vph)	0	435	0	0	0	0	0	51	0	274	276	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)		17.9						6.8		31.8	31.8	
Effective Green, g (s)		18.4						7.3		32.3	32.3	
Actuated g/C Ratio		0.26						0.10		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)		757						148		776	628	
v/s Ratio Prot								c0.04		0.16	c0.20	
v/s Ratio Perm		0.15										
v/c Ratio		0.57						0.34		0.35	0.44	
Uniform Delay, d1		22.4						29.1		12.1	12.7	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.1						1.4		1.3	2.2	
Delay (s)		23.5						30.6		13.4	15.0	
Level of Service		C						C		B	B	
Approach Delay (s)		23.5			0.0			30.6			14.2	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	19.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.0%	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	315	0	508	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	350	0	564	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	350	0	564	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)		29.1		29.1		
Effective Green, g (s)		29.1		29.1		
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)		1330		1567		
v/s Ratio Prot		0.20		c0.27		
v/s Ratio Perm						
v/c Ratio		0.26		0.36		
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	0.36		
Actuated Cycle Length (s)	39.2	Sum of lost time (s)	10.1
Intersection Capacity Utilization	37.4%	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	900	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)					3489			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3489			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	938	24	19	174	0	0	96	258
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	77	0
Lane Group Flow (vph)	0	0	0	0	975	0	0	193	0	0	277	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)					48.9			12.1			12.1	
Effective Green, g (s)					49.4			12.6			12.6	
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)					2462			548			539	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.28			0.06				
v/c Ratio					0.40			0.35			0.51	
Uniform Delay, d1					4.2			25.1			25.9	
Progression Factor					1.36			1.04			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					6.1			26.4			26.8	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.1			26.4			26.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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

8/17/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1208	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	1285	20	14	414	0	0	55	296
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	49
Lane Group Flow (vph)	0	0	0	0	1318	0	0	428	0	0	55	247
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					0.64			0.94			0.12	0.56
Uniform Delay, d1					8.6			24.9			19.2	21.9
Progression Factor					0.61			1.00			1.00	1.00
Incremental Delay, d2					1.5			29.3			0.5	5.2
Delay (s)					6.7			54.2			19.7	27.1
Level of Service					A			D			B	C
Approach Delay (s)		0.0			6.7			54.2			26.0	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	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

8/17/2009

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

8/17/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1182	2	426	18	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		1603	1613				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1603	1613				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	479	20	0	0	0	9
RTOR Reduction (vph)	0	0	0	0	0	0	158	158	0	0	0	9
Lane Group Flow (vph)	0	0	0	0	1330	0	91	92	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					26.8		9.0	9.0				0.7
Effective Green, g (s)					27.8		10.0	10.0				1.7
Actuated g/C Ratio					0.54		0.19	0.19				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)					1814		311	313				53
v/s Ratio Prot					c0.40							
v/s Ratio Perm							0.06	0.06				c0.00
v/c Ratio					0.73		0.29	0.29				0.01
Uniform Delay, d1					9.0		17.7	17.7				24.1
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.6		0.5	0.5				0.0
Delay (s)					10.6		18.3	18.3				24.1
Level of Service					B		B	B				C
Approach Delay (s)		0.0			10.6			18.3			24.1	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	51.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.7%	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	1199	181	0	87
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	1262	191	0	92
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1262				1262	631
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1262				1262	631
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)	547				159	419

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	631	631	191	92
Volume Left	0	0	0	0
Volume Right	0	0	191	92
cSH	1700	1700	1700	419
Volume to Capacity	0.37	0.37	0.11	0.22
Queue Length 95th (ft)	0	0	0	21
Control Delay (s)	0.0	0.0	0.0	16.0
Lane LOS				C
Approach Delay (s)	0.0			16.0
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	471	1052	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)	486	1085	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			486	486	486	1570	1570	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			486	486	486	1570	1570	
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	7	100	
cM capacity (veh/h)			482	582	492	111	420	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	847	723	9	103
Volume Left	0	0	9	0
Volume Right	362	723	0	0
cSH	1700	1700	492	111
Volume to Capacity	0.50	0.43	0.02	0.93
Queue Length 95th (ft)	0	0	1	144
Control Delay (s)	0.0	0.0	12.5	140.2
Lane LOS			B	F
Approach Delay (s)	0.0		129.7	
Approach LOS			F	

Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	53	0	0	1174	0	476
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	1276	0	517
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	58	0	0	1276	0	517
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			46.3		68.6
Effective Green, g (s)	13.8			46.8		68.6
Actuated g/C Ratio	0.20			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	356			2391		2787
v/s Ratio Prot	0.03			c0.36		
v/s Ratio Perm						c0.19
v/c Ratio	0.16			0.53		0.19
Uniform Delay, d1	22.6			5.4		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.8		0.1
Delay (s)	22.7			6.2		0.1
Level of Service	C			A		A
Approach Delay (s)	22.7			6.2	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)	68.6	Sum of lost time (s)	4.0
Intersection Capacity Utilization	44.1%	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	602	573	476	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			0.39	1.00	1.00	
Satd. Flow (perm)			687	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	627	597	496	39
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	627	597	529	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)			49.5	54.0	25.5	
Effective Green, g (s)			50.5	54.5	26.0	
Actuated g/C Ratio			0.74	0.79	0.38	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			865	1466	1314	
v/s Ratio Prot			c0.26	0.32	0.15	
v/s Ratio Perm			c0.27			
v/c Ratio			0.72	0.41	0.40	
Uniform Delay, d1			4.3	2.1	15.6	
Progression Factor			0.43	0.08	1.00	
Incremental Delay, d2			2.3	0.7	0.1	
Delay (s)			4.1	0.9	15.7	
Level of Service			A	A	B	
Approach Delay (s)	0.0			2.5	15.7	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	68.6	Sum of lost time (s)	18.1
Intersection Capacity Utilization	54.4%	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)	1229	230	0	0	0	21	0	331	131	0	0	0
Ideal Flow (vphpl)	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		0.96				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1517	1584				1277		2561				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1517	1584				1277		2561				
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)	1322	247	0	0	0	23	0	356	141	0	0	0
RTOR Reduction (vph)	262	80	0	0	0	23	0	57	0	0	0	0
Lane Group Flow (vph)	518	709	0	0	0	0	0	440	0	0	0	0
Heavy Vehicles (%)	13%	4%	2%	0%	16%	3%	5%	13%	19%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	38.6	38.6				2.0		17.4				
Effective Green, g (s)	39.1	39.1				1.0		17.9				
Actuated g/C Ratio	0.56	0.56				0.01		0.26				
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)	847	885				18		655				
v/s Ratio Prot								c0.17				
v/s Ratio Perm	0.34	0.45				c0.00						
v/c Ratio	0.61	0.80				0.02		0.67				
Uniform Delay, d1	10.4	12.3				34.0		23.4				
Progression Factor	0.84	0.19				1.00		1.00				
Incremental Delay, d2	1.1	2.6				0.1		2.7				
Delay (s)	9.7	4.9				34.2		26.1				
Level of Service	A	A				C		C				
Approach Delay (s)		7.3			34.2			26.1			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.1%	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	158	18	33	1555	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			4673				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1270			1631			4673				
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	35	1637	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	1678	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	16%	5%	5%	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			3224				
v/s Ratio Prot					c0.11							
v/s Ratio Perm		0.03						0.36				
v/c Ratio		0.16			0.56			0.52				
Uniform Delay, d1		23.4			25.5			5.2				
Progression Factor		1.11			1.00			0.66				
Incremental Delay, d2		0.3			2.3			0.4				
Delay (s)		26.1			27.7			3.9				
Level of Service		C			C			A				
Approach Delay (s)		26.1			27.7			3.9			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
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
306: S "L" 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)	90	144	0	0	82	114	52	1620	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		4338				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4338				
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	55	1705	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	1853	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	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		2739				
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		8.3				
Progression Factor		0.93			1.00	1.00		2.10				
Incremental Delay, d2		11.1			0.3	0.3		1.2				
Delay (s)		33.7			20.9	20.8		18.6				
Level of Service		C			C	C		B				
Approach Delay (s)		33.7			20.8			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	61.8%	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	1616	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			4193				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4193				
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	1857	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	1938	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			2995				
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	52.0%	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	42	1801	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			4200				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4200				
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	45	1916	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	1981	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)		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			2466				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.47				
v/c Ratio		0.87			0.11			0.80				
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			9.1				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.9			9.1			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	63.7%	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	1773	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	2015	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	2057	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	11%	6%	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)		8.8			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)		26.0			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		26.0			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	1480	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	1644	40
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	81	0	0	77	0	0	0	0	0	1701	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						0.41	
v/c Ratio		0.45			0.51						0.54	
Uniform Delay, d1		28.2			28.4						3.5	
Progression Factor		1.00			0.98						0.65	
Incremental Delay, d2		1.8			2.6						0.6	
Delay (s)		30.0			30.5						2.8	
Level of Service		C			C						A	
Approach Delay (s)		30.0			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	56	0	0	0	0	8	1339	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			1468						4149	
Flt Permitted		1.00			0.88						1.00	
Satd. Flow (perm)		1451			1305						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	61	0	0	0	0	9	1455	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	181	0	0	87	0	0	0	0	0	1542	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			268						2821	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.07						0.37	
v/c Ratio		0.61			0.32						0.55	
Uniform Delay, d1		25.2			23.7						5.7	
Progression Factor		1.00			1.05						0.23	
Incremental Delay, d2		3.5			0.6						0.7	
Delay (s)		28.7			25.4						2.0	
Level of Service		C			C						A	
Approach Delay (s)		28.7			25.4			0.0			2.0	
Approach LOS		C			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	51.8%	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	1354	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
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	1472	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	1519	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			0.50						0.20	
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	72	0	0	0	0	131	1217	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			1823						4319	
Flt Permitted		1.00			0.84						1.00	
Satd. Flow (perm)		1831			1557						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	76	0	0	0	0	138	1281	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	117	0	0	136	0	0	0	0	0	1449	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			456						2561	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.34	
v/c Ratio		0.22			0.30						0.57	
Uniform Delay, d1		18.7			19.2						8.7	
Progression Factor		1.00			0.97						0.82	
Incremental Delay, d2		0.9			1.6						0.8	
Delay (s)		19.6			20.2						8.0	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.2			0.0			8.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.1%	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	0	0	28	151	0	0	0	0	21	337	943
Ideal Flow (vphpl)	1900	1900	1900	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						0.91	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					1320						2359	1278
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1320						2359	1278
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	161	0	0	0	0	22	359	1003
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	174	173
Lane Group Flow (vph)	0	0	0	0	191	0	0	0	0	0	709	328
Heavy Vehicles (%)	2%	10%	10%	64%	5%	2%	2%	2%	2%	0%	13%	15%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					15.7						45.3	45.3
Effective Green, g (s)					16.2						45.8	45.8
Actuated g/C Ratio					0.23						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)					305						1543	836
v/s Ratio Prot												
v/s Ratio Perm					0.14						0.30	0.26
v/c Ratio					0.63						0.46	0.39
Uniform Delay, d1					24.2						6.0	5.6
Progression Factor					0.81						0.63	2.57
Incremental Delay, d2					3.9						0.8	1.2
Delay (s)					23.5						4.6	15.6
Level of Service					C						A	B
Approach Delay (s)		0.0			23.5			0.0			8.6	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.1%	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	1403	22	0	0	0	0	0	0	19	326	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)		2947									2594	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2947									2594	
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	1613	25	0	0	0	0	0	0	22	375	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	1637	0	0	0	0	0	0	0	0	394	0
Heavy Vehicles (%)	5%	10%	10%	2%	2%	2%	2%	6%	21%	0%	19%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		40.0									21.0	
Effective Green, g (s)		40.5									21.5	
Actuated g/C Ratio		0.58									0.31	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1705									797	
v/s Ratio Prot		c0.56										
v/s Ratio Perm											0.15	
v/c Ratio		0.96									0.49	
Uniform Delay, d1		14.0									19.8	
Progression Factor		0.73									1.38	
Incremental Delay, d2		11.4									0.4	
Delay (s)		21.6									27.7	
Level of Service		C									C	
Approach Delay (s)		21.6			0.0			0.0			27.7	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.1%	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)	118	657	0	0	0	0	0	1457	567	0	0	0
Ideal Flow (vphpl)	1900	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	1068			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1068			
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	1534	597	0	0	0
RTOR Reduction (vph)	0	13	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	803	0	0	0	0	0	1534	560	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	16%	5%	4%	6%	21%	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	659			
v/s Ratio Prot								0.50				
v/s Ratio Perm		0.18							c0.52			
v/c Ratio		0.65						0.81	0.85			
Uniform Delay, d1		22.7						10.3	10.8			
Progression Factor		0.87						1.78	1.92			
Incremental Delay, d2		1.2						3.1	10.7			
Delay (s)		21.0						21.4	31.4			
Level of Service		C						C	C			
Approach Delay (s)		21.0			0.0			24.2			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	23.3	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	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	723	411	76	1403	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)					3048			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3048			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	745	424	78	1446	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	1151	0	0	1518	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	16%	5%	4%	4%	4%	5%	12%	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)					1067			1577				
v/s Ratio Prot					c0.38							
v/s Ratio Perm								0.52				
v/c Ratio					1.08			0.96				
Uniform Delay, d1					22.8			15.6				
Progression Factor					1.00			0.75				
Incremental Delay, d2					51.3			10.7				
Delay (s)					74.1			22.4				
Level of Service					E			C				
Approach Delay (s)		0.0			74.1			22.4			0.0	
Approach LOS		A			E			C			A	

Intersection Summary			
HCM Average Control Delay	44.8	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	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1284	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	1381	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	49	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1726	0
Heavy Vehicles (%)	2%	2%	2%	24%	4%	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									0.77	
Incremental Delay, d2		1.3									0.7	
Delay (s)		27.1									5.0	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			5.0	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.5	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	494	296	0	0	0	0	0	1268	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)				1060	2996						4415	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1060	2996						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	537	322	0	0	0	0	0	1378	68
RTOR Reduction (vph)	0	0	0	24	24	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	0	0	255	556	0	0	0	0	0	1439	0
Heavy Vehicles (%)	2%	2%	2%	24%	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)				20.8	20.8						40.2	
Effective Green, g (s)				21.3	21.3						40.7	
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	912						2567	
v/s Ratio Prot				c0.24	0.19						c0.33	
v/s Ratio Perm												
v/c Ratio				0.79	0.61						0.56	
Uniform Delay, d1				22.3	20.8						9.1	
Progression Factor				0.96	1.04						1.00	
Incremental Delay, d2				1.2	0.1						0.9	
Delay (s)				22.6	21.7						10.0	
Level of Service				C	C						A	
Approach Delay (s)		0.0			22.0			0.0			10.0	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.5	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	80.8%	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	1234	36	28	1023	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	3342		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3126		1727	3342		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	1452	42	33	1204	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	1506	0	33	1206	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	8%	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	2314		261	259			90	
v/s Ratio Prot				0.02	c0.36		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.52		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.7		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.55		1.00	1.00			1.00	
Incremental Delay, d2		3.3		2.9	0.7		22.4	19.9			1.7	
Delay (s)		20.4		59.5	5.4		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.4			6.9			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	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1571	102	53	1075	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	3343		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	3343		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	1636	106	55	1120	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	1739	0	55	1120	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	16%	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	1907		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	0.93		0.50	0.59		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.8		53.3	16.4		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	8.4		2.5	1.3		21.0	2.2			2.1	
Delay (s)	42.3	22.6		55.9	17.7		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		22.9			19.5			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.4	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	65.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	969	3	516	909	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		2878	1491		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3176		2878	1491		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1196	4	637	1122	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1200	0	1198	561	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	16%	7%	16%	16%	2%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	39.7		41.8	93.5		41.8
Effective Green, g (s)	41.7		43.8	93.5		43.8
Actuated g/C Ratio	0.45		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)	1416		1348	1491		1244
v/s Ratio Prot	c0.38		c0.42	0.38		0.14
v/s Ratio Perm						
v/c Ratio	0.85		0.89	0.38		0.30
Uniform Delay, d1	23.1		22.6	0.0		15.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	4.8		7.5	0.7		0.1
Delay (s)	27.9		30.1	0.7		15.5
Level of Service	C		C	A		B
Approach Delay (s)	27.9		20.7		15.5	
Approach LOS	C		C		B	

Intersection Summary			
HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	93.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.7%	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)	177	204	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	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	308	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	503	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	541	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		1147	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1147	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		177	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	544	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	201
Volume to Capacity	0.35	0.00	0.05
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.0	0.1	24.0
Lane LOS		A	C
Approach Delay (s)	0.0	0.1	24.0
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	39.4%	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	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	574	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	586			601			1212	1208	603	1202	1203	581
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	586			601			1212	1208	603	1202	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			100	99	100	94	99	98
cM capacity (veh/h)	974			959			153	182	497	155	178	505

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	587	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	974	959	182	222
Volume to Capacity	0.01	0.00	0.01	0.08
Queue Length 95th (ft)	1	0	0	7
Control Delay (s)	0.2	0.1	24.9	22.7
Lane LOS	A	A	C	C
Approach Delay (s)	0.2	0.1	24.9	22.7
Approach LOS			C	C

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	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	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			602			1176	1176	602	1176	1176	569
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570			602			1176	1176	602	1176	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			99	100	100	99	100	100
cM capacity (veh/h)	988			961			168	193	500	168	191	522

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	603	571	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	988	961	251	254
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	19.5	19.3
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	19.5	19.3
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	39.9%	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	468	34	10	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	514	37	11	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			552			1212	1184	535	1184	1197	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			552			1212	1184	535	1184	1197	523
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
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 %	95			99			95	99	100	88	99	94
cM capacity (veh/h)	1021			984			142	179	548	155	174	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	602	537	11	54
Volume Left	51	11	7	19
Volume Right	37	12	2	34
cSH	1021	984	176	286
Volume to Capacity	0.05	0.01	0.06	0.19
Queue Length 95th (ft)	4	1	5	17
Control Delay (s)	1.3	0.3	26.9	20.5
Lane LOS	A	A	D	C
Approach Delay (s)	1.3	0.3	26.9	20.5
Approach LOS			D	C

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	487	0	0	27	488
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	530
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			589	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			589	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)			462	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	529	29	530
Volume Left	0	29	0
Volume Right	529	0	0
cSH	1700	1578	1700
Volume to Capacity	0.31	0.02	0.31
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.4	
Approach LOS			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	500	5	0	16	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	18	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	6.5	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	89	100	100
cM capacity (veh/h)	1585		149	164	168	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	366	189	18
Volume Left	366	183	0
Volume Right	0	5	0
cSH	1585	1585	164
Volume to Capacity	0.35	0.35	0.11
Queue Length 95th (ft)	39	39	9
Control Delay (s)	8.5	8.3	29.5
Lane LOS	A	A	D
Approach Delay (s)	8.4		29.5
Approach LOS			D

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	24.4%	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	492	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	559	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	411	609	0	599	598	291	0			582		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	411	609	0	599	598	291	0			582		
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 %	93	99	100	100	53	99	99			100		
cM capacity (veh/h)	331	409	1091	382	413	709	1600			988		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	293	302
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	339	420	1600	1700
Volume to Capacity	0.08	0.48	0.01	0.18
Queue Length 95th (ft)	7	63	1	0
Control Delay (s)	16.5	21.1	0.4	0.0
Lane LOS	C	C	A	
Approach Delay (s)	16.5	21.1	0.2	
Approach LOS	C	C		

Intersection Summary				
Average Delay		5.8		
Intersection Capacity Utilization		37.2%	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	506	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	527	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	284	543	2	545	540	266	0			532		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	284	543	2	545	540	266	0			532		
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 %	99	99	100	100	96	100	100			100		
cM capacity (veh/h)	629	448	1086	419	450	738	1593			1031		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	269	269
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	530	470	1593	1700
Volume to Capacity	0.03	0.04	0.00	0.16
Queue Length 95th (ft)	2	3	0	0
Control Delay (s)	12.0	13.0	0.2	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	13.0	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		0.8		
Intersection Capacity Utilization		27.9%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	19	470	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	22	547	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	382	605	4	603	601	281	3			557		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	382	605	4	603	601	281	3			557		
tC, single (s)	7.9	6.9	7.2	7.6	6.9	7.3	4.3			4.3		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.4	3.6	4.2	3.5	2.3			2.3		
p0 queue free %	97	98	100	100	72	99	99			100		
cM capacity (veh/h)	385	367	1034	362	369	663	1571			946		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	295	280
Volume Left	12	0	22	0
Volume Right	0	9	0	7
cSH	378	383	1571	1700
Volume to Capacity	0.05	0.30	0.01	0.16
Queue Length 95th (ft)	4	31	1	0
Control Delay (s)	15.0	18.3	0.7	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.0	18.3	0.3	
Approach LOS	C	C		

Intersection Summary				
Average Delay		3.6		
Intersection Capacity Utilization		31.5%	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	3	84	22	0	0	0	0	3	333	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	26	0	0	0	0	4	396	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	0.94	0.94	0.94	0.94	0.94		0.94					
vC, conflicting volume	424	418	206	223	423	7	409			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	269	263	38	56	268	7	253			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	4.1	3.4	2.2			2.3		
p0 queue free %	100	98	100	88	96	100	100			100		
cM capacity (veh/h)	567	572	927	840	586	1055	1232			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	126	202	208
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	619	771	1541	1700
Volume to Capacity	0.03	0.16	0.00	0.12
Queue Length 95th (ft)	2	15	0	0
Control Delay (s)	11.0	10.6	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.0	10.6	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.8		
Intersection Capacity Utilization		30.9%	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	394	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	424	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	461	453	220	245	459	4	437			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	461	453	220	245	459	4	437			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	98	100	100			99		
cM capacity (veh/h)	476	502	790	674	498	1080	1120			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	223	225
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	529	589	1576	1700
Volume to Capacity	0.03	0.05	0.01	0.13
Queue Length 95th (ft)	2	4	1	0
Control Delay (s)	12.0	11.4	0.4	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	11.4	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization		30.2%	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	349	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	371	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	440			0			455	434	222	232	468	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	440			0			455	434	222	232	468	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	94	100	81	91	100
cM capacity (veh/h)	1116			1565			456	514	788	667	489	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	199	255	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	520	611
Volume to Capacity	0.01	0.15	0.06	0.28
Queue Length 95th (ft)	1	0	5	29
Control Delay (s)	0.6	0.0	12.4	13.2
Lane LOS	A		B	B
Approach Delay (s)	0.3		12.4	13.2
Approach LOS			B	B

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	34.3%	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	0	0	0	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	0	0	0	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	49			29			70	78	49	70	70	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	49			29			70	78	49	70	70	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)	1571			1584			922	658	1020	908	810	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	49	0	5
Volume Left	0	0	0	5
Volume Right	17	0	0	0
cSH	1571	1584	1700	908
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	0.0	9.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	9.0
Approach LOS			A	A

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	13.3%	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	44	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	48	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	61	48	49			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	48	49			
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)	944	1020	1571			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	49
Volume Left	1	1	0
Volume Right	1	0	1
cSH	981	1571	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

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	437	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	502	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	502			456			1092	1044	454	1052	1049	506
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	502			456			1092	1044	454	1052	1049	506
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			89	98	99	97	100	91
cM capacity (veh/h)	1017			1115			163	212	588	186	210	549

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	509	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	1017	1700	1115	1700	198	455
Volume to Capacity	0.04	0.27	0.00	0.30	0.14	0.12
Queue Length 95th (ft)	3	0	0	0	12	10
Control Delay (s)	8.7	0.0	8.2	0.0	26.0	14.0
Lane LOS	A		A		D	B
Approach Delay (s)	0.7		0.1		26.0	14.0
Approach LOS					D	B

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

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	388	98	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	422	107	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	528			372			943	964	366	960	916	475
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			372			943	964	366	960	916	475
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			96	94	94	73	98	95
cM capacity (veh/h)	999			1144			210	236	653	206	264	592

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	545	65	92
Volume Left	18	16	9	57
Volume Right	11	107	41	29
cSH	999	1144	385	265
Volume to Capacity	0.02	0.01	0.17	0.35
Queue Length 95th (ft)	1	1	15	38
Control Delay (s)	0.6	0.4	16.2	25.7
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	16.2	25.7
Approach LOS			C	D

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	49.8%	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	281	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	316	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	316			326			356	672	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	316			326			356	672	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	90	95	100	100	100
cM capacity (veh/h)	1217			596			591	371	716	485	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	316	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	316	33
cSH	1217	1700	596	1700	481
Volume to Capacity	0.01	0.19	0.01	0.19	0.14
Queue Length 95th (ft)	1	0	1	0	12
Control Delay (s)	8.0	0.0	11.1	0.0	13.7
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.2		13.7
Approach LOS					B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

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

8/12/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	240	0	37	0	0	0	31	228	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)	282	0	44	0	0	0	36	268	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			44		605	608	0	873	586	22
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			44		605	608	0	873	586	22
tC, single (s)	4.7			4.1		7.6	6.5	6.9	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.8			2.2		4.0	4.0	3.9	3.5	4.0	3.3
p0 queue free %	78			100		100	89	71	98	89	100
cM capacity (veh/h)	1305			1565		265	318	924	148	333	1061

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	326	0	305	40
Volume Left	282	0	0	2
Volume Right	44	0	268	0
cSH	1305	1700	753	310
Volume to Capacity	0.22	0.00	0.40	0.13
Queue Length 95th (ft)	21	0	49	11
Control Delay (s)	7.6	0.0	13.0	18.3
Lane LOS	A		B	C
Approach Delay (s)	7.6	0.0	13.0	18.3
Approach LOS			B	C

Intersection Summary			
Average Delay	10.7		
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	110	120	0	99	178	174
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	120	130	0	108	193	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			250		292	185
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			250		292	185
tC, single (s)			4.1		6.9	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.0	3.3
p0 queue free %			100		68	78
cM capacity (veh/h)			1327		607	863

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	250	108	383
Volume Left	0	0	193
Volume Right	130	0	189
cSH	1700	1327	711
Volume to Capacity	0.15	0.00	0.54
Queue Length 95th (ft)	0	0	81
Control Delay (s)	0.0	0.0	15.8
Lane LOS			C
Approach Delay (s)	0.0	0.0	15.8
Approach LOS			C

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	0	58	0	0	58	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	63	0	0	63	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			63		32	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			63		32	32
tC, single (s)			4.1		7.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.4	3.3
p0 queue free %			100		92	100
cM capacity (veh/h)			1540		782	1042

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	63	0	63
Volume Left	0	0	63
Volume Right	63	0	0
cSH	1700	1700	782
Volume to Capacity	0.04	0.00	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.0	10.0
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.0
Approach LOS			B

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	13.6%	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)	11	510	4	15	609	31	33	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			0.96	1.00		0.97	
Satd. Flow (prot)		1500			1601			1780	1538		1747	
Flt Permitted		0.99			0.99			0.73	1.00		0.79	
Satd. Flow (perm)		1481			1582			1348	1538		1420	
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	548	4	16	655	33	35	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	564	0	0	703	0	0	43	3	0	44	0
Heavy Vehicles (%)	7%	27%	7%	2%	19%	2%	2%	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)		34.2			34.2			6.0	6.0		6.0	
Effective Green, g (s)		34.7			34.7			6.5	6.5		6.5	
Actuated g/C Ratio		0.71			0.71			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)		1045			1116			178	203		188	
v/s Ratio Prot												
v/s Ratio Perm		0.38			c0.44			c0.03	0.00		0.03	
v/c Ratio		0.54			0.63			0.24	0.02		0.23	
Uniform Delay, d1		3.4			3.8			19.1	18.6		19.1	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.5			1.1			0.7	0.0		0.6	
Delay (s)		4.0			5.0			19.8	18.6		19.8	
Level of Service		A			A			B	B		B	
Approach Delay (s)		4.0			5.0			19.4			19.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	49.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	180	266	19	181
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	205	302	22	206
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		915	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					711	
vCu, unblocked vol			220		915	203
tC, single (s)			5.1		6.5	7.2
tC, 2 stage (s)					5.5	
tF (s)			3.1		3.6	4.2
p0 queue free %			78		94	68
cM capacity (veh/h)			939		349	646

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	205	302	227
Volume Left	0	0	205	0	22
Volume Right	0	17	0	0	206
cSH	1700	1700	939	1700	598
Volume to Capacity	0.12	0.01	0.22	0.18	0.38
Queue Length 95th (ft)	0	0	21	0	44
Control Delay (s)	0.0	0.0	9.9	0.0	14.7
Lane LOS			A		B
Approach Delay (s)	0.0		4.0		14.7
Approach LOS					B

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	41.6%	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)	119	1501	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)		3175						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3175						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	1614	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	1754	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	8%	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)		2490						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.55									c0.03	
v/c Ratio		0.70						0.19			0.33	
Uniform Delay, d1		3.6						28.8			29.3	
Progression Factor		1.00						1.00			0.54	
Incremental Delay, d2		1.7						0.3			0.6	
Delay (s)		5.3						29.1			16.3	
Level of Service		A						C			B	
Approach Delay (s)		5.3			0.0			29.1			16.3	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1513	71	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)		3162						1711			1621	
Flt Permitted		1.00						1.00			0.57	
Satd. Flow (perm)		3162						1711			954	
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	1780	84	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	1879	0	0	0	0	0	227	0	0	187	0
Heavy Vehicles (%)	2%	8%	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)		45.5						15.5			15.5	
Effective Green, g (s)		45.5						15.5			15.5	
Actuated g/C Ratio		0.66						0.22			0.22	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		2085						384			214	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.59									c0.20	
v/c Ratio		0.90						0.59			0.87	
Uniform Delay, d1		9.9						23.9			25.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		5.8						2.4			30.1	
Delay (s)		15.7						26.3			55.9	
Level of Service		B						C			E	
Approach Delay (s)		15.7			0.0			26.3			55.9	
Approach LOS		B			A			C			E	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1507	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)		3172						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3172						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	1554	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1595	0	0	0	0	0	28	0	0	55	0
Heavy Vehicles (%)	2%	8%	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)		41.2						4.6			4.6	
Effective Green, g (s)		41.7						5.1			5.1	
Actuated g/C Ratio		0.76						0.09			0.09	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2414						149			126	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.50									c0.04	
v/c Ratio		0.66						0.19			0.44	
Uniform Delay, d1		3.1						22.9			23.5	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.7						0.6			2.4	
Delay (s)		3.8						23.6			25.9	
Level of Service		A						C			C	
Approach Delay (s)		3.8			0.0			23.6			25.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	52	1531	26	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)	54	1578	27	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			1605			1722	1699	803	949	1712	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1605			1722	1699	803	949	1712	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	63	89	66	47	100
cM capacity (veh/h)	1607			403			32	87	325	135	88	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	843	816	69	92
Volume Left	54	0	0	45
Volume Right	0	27	37	0
cSH	1607	1700	144	107
Volume to Capacity	0.03	0.48	0.48	0.86
Queue Length 95th (ft)	3	0	56	125
Control Delay (s)	0.9	0.0	51.3	126.3
Lane LOS	A		F	F
Approach Delay (s)	0.5		51.3	126.3
Approach LOS			F	F

Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	1211	12	0	0	0	0	357	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	3115						3459				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3115						3459				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	1316	13	0	0	0	0	388	9	0	0	0
RTOR Reduction (vph)	45	1	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	63	1328	0	0	0	0	0	395	0	0	0	0
Heavy Vehicles (%)	3%	10%	3%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	28.5	28.5						11.8				
Effective Green, g (s)	29.5	29.5						12.8				
Actuated g/C Ratio	0.59	0.59						0.25				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	1028	1827						880				
v/s Ratio Prot		c0.43						c0.11				
v/s Ratio Perm	0.04											
v/c Ratio	0.06	0.73						0.45				
Uniform Delay, d1	4.5	7.5						15.8				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	1.5						0.4				
Delay (s)	4.5	9.0						16.1				
Level of Service	A	A						B				
Approach Delay (s)		8.6			0.0			16.1			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	50.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.7%	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)	17	1254	70	0	0	0	0	27	345	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					0.87	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2716	1300					1555	1519		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.68	
Satd. Flow (perm)		2716	1300					1555	1519		1264	
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	1348	75	0	0	0	0	29	371	44	34	0
RTOR Reduction (vph)	0	0	10	0	0	0	0	26	26	0	0	0
Lane Group Flow (vph)	0	1366	65	0	0	0	0	177	171	0	78	0
Heavy Vehicles (%)	6%	13%	6%	2%	2%	2%	2%	2%	1%	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)		47.7	47.7					13.3	13.3		13.3	
Effective Green, g (s)		48.2	48.2					13.8	13.8		13.8	
Actuated g/C Ratio		0.69	0.69					0.20	0.20		0.20	
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)		1870	895					307	299		249	
v/s Ratio Prot		c0.50						c0.11				
v/s Ratio Perm			0.05						0.11		0.06	
v/c Ratio		0.73	0.07					0.58	0.57		0.31	
Uniform Delay, d1		6.8	3.6					25.5	25.4		24.0	
Progression Factor		0.43	0.43					1.00	1.00		1.00	
Incremental Delay, d2		2.1	0.1					2.6	2.6		0.7	
Delay (s)		5.0	1.7					28.1	28.1		24.8	
Level of Service		A	A					C	C		C	
Approach Delay (s)		4.9			0.0			28.1			24.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	10.5	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	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1225	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)		2712						1314			1462	
Flt Permitted		1.00						1.00			0.88	
Satd. Flow (perm)		2712						1314			1309	
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	1289	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	33	0	0	0	0
Lane Group Flow (vph)	0	1337	0	0	0	0	0	71	0	0	18	0
Heavy Vehicles (%)	6%	13%	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)		53.8						8.2			8.2	
Effective Green, g (s)		53.8						8.2			8.2	
Actuated g/C Ratio		0.77						0.12			0.12	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2084						154			153	
v/s Ratio Prot								c0.05				
v/s Ratio Perm		0.49									0.01	
v/c Ratio		0.64						0.46			0.12	
Uniform Delay, d1		3.7						28.8			27.7	
Progression Factor		0.58						1.00			1.00	
Incremental Delay, d2		0.7						2.2			0.3	
Delay (s)		2.8						31.0			28.0	
Level of Service		A						C			C	
Approach Delay (s)		2.8			0.0			31.0			28.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1084	16	0	0	0	0	0	29	289	204	0
Ideal Flow (vphpl)	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)		2689							1289	1681	1403	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2689							1289	1681	1403	
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	1141	17	0	0	0	0	0	31	304	215	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	166	12	0
Lane Group Flow (vph)	0	1156	0	0	0	0	0	0	4	89	252	0
Heavy Vehicles (%)	6%	14%	6%	2%	2%	2%	2%	1%	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)		29.5							9.5	17.5	17.5	
Effective Green, g (s)		30.0							10.0	18.0	18.0	
Actuated g/C Ratio		0.43							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)		1152							184	432	361	
v/s Ratio Prot		c0.43							c0.00	0.05	c0.18	
v/s Ratio Perm												
v/c Ratio		1.00							0.02	0.21	0.70	
Uniform Delay, d1		20.0							25.8	20.4	23.5	
Progression Factor		1.14							1.00	1.00	1.00	
Incremental Delay, d2		25.7							0.2	1.1	10.7	
Delay (s)		48.5							26.0	21.5	34.2	
Level of Service		D							C	C	C	
Approach Delay (s)		48.5			0.0			26.0			28.0	
Approach LOS		D			A			C			C	

Intersection Summary			
HCM Average Control Delay	41.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.2%	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)	7	561	12	0	0	0	0	68	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						0.96		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2477						1446		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2477						1446		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	597	13	0	0	0	0	72	27	489	50	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	0	615	0	0	0	0	0	79	0	269	270	0
Heavy Vehicles (%)	6%	24%	6%	2%	2%	2%	2%	1%	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)		26.3						7.6		22.6	22.6	
Effective Green, g (s)		26.8						8.1		23.1	23.1	
Actuated g/C Ratio		0.38						0.12		0.33	0.33	
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)		948						167		555	449	
v/s Ratio Prot								c0.05		0.16	c0.20	
v/s Ratio Perm		0.25										
v/c Ratio		0.65						0.47		0.48	0.60	
Uniform Delay, d1		17.7						28.9		18.7	19.6	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.5						2.1		3.0	5.9	
Delay (s)		19.3						30.9		21.7	25.5	
Level of Service		B						C		C	C	
Approach Delay (s)		19.3			0.0			30.9			23.6	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.4%	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	487	0	676	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)		1490		1840		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1490		1840		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	541	0	751	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	541	0	751	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	25%	2%	17%	3%	3%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		34.8		34.8		
Effective Green, g (s)		34.8		34.8		
Actuated g/C Ratio		0.78		0.78		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1157		1429		
v/s Ratio Prot		0.36		c0.41		
v/s Ratio Perm						
v/c Ratio		0.47		0.53		
Uniform Delay, d1		1.8		1.9		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.3		0.4		
Delay (s)		2.1		2.2		
Level of Service		A		A		
Approach Delay (s)	2.1			2.2	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	2.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	44.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	1060	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)					3220			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3220			3047			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	1104	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	48	0
Lane Group Flow (vph)	0	0	0	0	1140	0	0	189	0	0	299	0
Heavy Vehicles (%)	2%	2%	2%	3%	12%	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)					48.3			12.7			12.7	
Effective Green, g (s)					48.8			13.2			13.2	
Actuated g/C Ratio					0.70			0.19			0.19	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2245			575			565	
v/s Ratio Prot											c0.10	
v/s Ratio Perm					0.35			0.06				
v/c Ratio					0.51			0.33			0.53	
Uniform Delay, d1					5.0			24.6			25.6	
Progression Factor					1.49			1.01			1.00	
Incremental Delay, d2					0.7			0.3			0.9	
Delay (s)					8.2			25.1			26.5	
Level of Service					A			C			C	
Approach Delay (s)		0.0			8.2			25.1			26.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.6%	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)	0	0	0	14	1362	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)					3143			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3143			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	1449	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	34
Lane Group Flow (vph)	0	0	0	0	1482	0	0	419	0	0	54	256
Heavy Vehicles (%)	2%	2%	2%	2%	9%	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)					1931			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.47			c0.25				0.16
v/c Ratio					0.77			0.92			0.12	0.59
Uniform Delay, d1					9.9			24.8			19.2	22.1
Progression Factor					0.75			1.00			1.00	1.00
Incremental Delay, d2					2.8			26.1			0.5	5.6
Delay (s)					10.1			50.8			19.7	27.7
Level of Service					B			D			B	C
Approach Delay (s)		0.0			10.1			50.8			26.5	
Approach LOS		A			B			D			C	

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1298	92	32	80	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		0.99			1.00	
Satd. Flow (prot)					3343	1553		1818			1794	
Flt Permitted					1.00	1.00		0.82			1.00	
Satd. Flow (perm)					3343	1553		1519			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	1366	97	34	84	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1412	57	0	118	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	8%	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)					34.0	34.0		15.5			15.5	
Effective Green, g (s)					34.0	34.0		15.5			15.5	
Actuated g/C Ratio					0.59	0.59		0.27			0.27	
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)					1977	918		409			484	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.42	0.04		0.08				
v/c Ratio					0.71	0.06		0.29			0.62	
Uniform Delay, d1					8.3	5.0		16.6			18.4	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					1.2	0.0		0.4			2.3	
Delay (s)					9.6	5.0		17.0			20.7	
Level of Service					A	A		B			C	
Approach Delay (s)		0.0			9.3			17.0			20.7	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	57.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.4%	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)	0	0	0	33	1458	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)					3146			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3146			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	1551	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	1591	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	9%	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)					2379			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.51			c0.02				
v/c Ratio					0.67			0.35			0.29	
Uniform Delay, d1					2.4			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.7			2.8			2.0	
Delay (s)					3.1			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			3.1			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
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	1349	12	52	18	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	1482	13	57	20	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	1496			0			855	1588	0	1591	1581	748
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1496			0			855	1588	0	1591	1581	748
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			72	81	100	100	81	97
cM capacity (veh/h)	445			1622			204	105	1084	61	107	360

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	787	754	77	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	164	146
Volume to Capacity	0.03	0.44	0.47	0.22
Queue Length 95th (ft)	2	0	55	20
Control Delay (s)	0.8	0.0	44.9	36.5
Lane LOS	A		E	E
Approach Delay (s)	0.4		44.9	36.5
Approach LOS			E	E

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
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	1337	2	418	18	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)					3146		1603	1613				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3146		1603	1613				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	1502	2	470	20	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	1504	0	88	90	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	9%	2%	7%	7%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					34.7		9.0	9.0				0.8
Effective Green, g (s)					35.7		10.0	10.0				1.8
Actuated g/C Ratio					0.60		0.17	0.17				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)					1888		269	271				49
v/s Ratio Prot					c0.48							
v/s Ratio Perm							0.06	0.06				c0.00
v/c Ratio					0.80		0.33	0.33				0.00
Uniform Delay, d1					9.1		21.8	21.8				28.0
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					2.4		0.7	0.7				0.0
Delay (s)					11.5		22.5	22.5				28.0
Level of Service					B		C	C				C
Approach Delay (s)		0.0			11.5			22.5			28.0	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1354	177	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	1425	186	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	1425				1425	713
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1425				1425	713
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	76
cM capacity (veh/h)	473				124	370

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	713	713	186	89
Volume Left	0	0	0	0
Volume Right	0	0	186	89
cSH	1700	1700	1700	370
Volume to Capacity	0.42	0.42	0.11	0.24
Queue Length 95th (ft)	0	0	0	23
Control Delay (s)	0.0	0.0	0.0	17.8
Lane LOS				C
Approach Delay (s)	0.0			17.8
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	462	1209	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)	476	1246	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			476	476	476	1723	1723	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			476	476	476	1723	1723	
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)			488	589	499	89	367	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	892	831	8	101
Volume Left	0	0	8	0
Volume Right	415	831	0	0
cSH	1700	1700	499	89
Volume to Capacity	0.52	0.49	0.02	1.13
Queue Length 95th (ft)	0	0	1	174
Control Delay (s)	0.0	0.0	12.3	222.3
Lane LOS			B	F
Approach Delay (s)	0.0		206.4	
Approach LOS			F	

Intersection Summary			
Average Delay	12.3		
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	75	0	0	1329	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)	1787			3282		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1787			3282		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	0	0	1445	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	82	0	0	1445	0	508
Heavy Vehicles (%)	1%	2%	16%	10%	3%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	15.9			52.2		77.1
Effective Green, g (s)	16.4			52.7		77.1
Actuated g/C Ratio	0.21			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	380			2243		2787
v/s Ratio Prot	c0.05			c0.44		
v/s Ratio Perm						c0.18
v/c Ratio	0.22			0.64		0.18
Uniform Delay, d1	25.0			6.9		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			1.4		0.1
Delay (s)	25.1			8.3		0.1
Level of Service	C			A		A
Approach Delay (s)	25.1			8.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	4.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	768	584	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)			1504	1845	3467	
Flt Permitted			0.37	1.00	1.00	
Satd. Flow (perm)			582	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	800	608	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	800	608	518	0
Heavy Vehicles (%)	2%	2%	16%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			57.2	61.7	25.8	
Effective Green, g (s)			58.2	62.2	26.3	
Actuated g/C Ratio			0.75	0.81	0.34	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			821	1488	1183	
v/s Ratio Prot			c0.40	0.33	0.15	
v/s Ratio Perm			c0.33			
v/c Ratio			0.97	0.41	0.44	
Uniform Delay, d1			11.0	2.1	19.7	
Progression Factor			0.81	0.10	1.00	
Incremental Delay, d2			21.8	0.6	0.1	
Delay (s)			30.6	0.8	19.8	
Level of Service			C	A	B	
Approach Delay (s)	0.0			17.8	19.8	
Approach LOS	A			B	B	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	18.9
Intersection Capacity Utilization	63.3%	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

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	1179	230	0	0	0	21	0	331	131	0	0	0
Ideal Flow (vphpl)	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		0.96				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1545	1605				1277		2561				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1545	1605				1277		2561				
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)	1268	247	0	0	0	23	0	356	141	0	0	0
RTOR Reduction (vph)	262	77	0	0	0	23	0	57	0	0	0	0
Lane Group Flow (vph)	486	690	0	0	0	0	0	440	0	0	0	0
Heavy Vehicles (%)	11%	4%	2%	0%	16%	3%	5%	13%	19%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	38.6	38.6				2.0		17.4				
Effective Green, g (s)	39.1	39.1				1.0		17.9				
Actuated g/C Ratio	0.56	0.56				0.01		0.26				
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)	863	897				18		655				
v/s Ratio Prot								c0.17				
v/s Ratio Perm	0.31	0.43				c0.00						
v/c Ratio	0.56	0.77				0.02		0.67				
Uniform Delay, d1	10.0	12.0				34.0		23.4				
Progression Factor	0.76	0.17				1.00		1.00				
Incremental Delay, d2	1.1	2.7				0.1		2.7				
Delay (s)	8.7	4.7				34.2		26.1				
Level of Service	A	A				C		C				
Approach Delay (s)		6.7			34.2			26.1			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.7%	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	158	18	33	1505	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			4714				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1269			1631			4714				
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	35	1584	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	1625	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	16%	5%	5%	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			3259				
v/s Ratio Prot					c0.11							
v/s Ratio Perm		0.03						0.34				
v/c Ratio		0.16			0.57			0.50				
Uniform Delay, d1		23.4			25.5			5.1				
Progression Factor		1.10			1.00			0.66				
Incremental Delay, d2		0.3			2.3			0.4				
Delay (s)		26.1			27.8			3.7				
Level of Service		C			C			A				
Approach Delay (s)		26.1			27.8			3.7			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
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
306: S "L" 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)	90	144	0	0	82	114	52	1570	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		4374				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4374				
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	55	1653	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	19	0	8	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	77	0	1801	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	10%	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		2762				
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		2.13				
Incremental Delay, d2		11.1			0.3	0.3		1.1				
Delay (s)		34.0			20.9	20.8		18.4				
Level of Service		C			C	C		B				
Approach Delay (s)		34.0			20.8			18.4			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.8%	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)	76	31	0	0	71	32	28	1566	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	1800	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	1881	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						0.44				
v/c Ratio		0.54			0.34			0.62				
Uniform Delay, d1		26.5			25.5			5.1				
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	51.0%	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	42	1751	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	45	1863	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	1928	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)		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			0.61				
Incremental Delay, d2		22.1			0.1			1.9				
Delay (s)		37.7			17.9			8.5				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.9			8.5			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	0.80		
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

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1723	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	1958	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	2000	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	9%	6%	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)		8.8			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	51.2%	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	56	37	34	35	0	0	0	0	17	1430	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	1589	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	1646	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						0.39	
v/c Ratio		0.43			0.51						0.51	
Uniform Delay, d1		28.1			28.4						3.4	
Progression Factor		1.00			0.97						0.67	
Incremental Delay, d2		1.6			2.6						0.5	
Delay (s)		29.8			30.2						2.8	
Level of Service		C			C						A	
Approach Delay (s)		29.8			30.2			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	0.51		
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	56	0	0	0	0	8	1289	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			1468						4219	
Flt Permitted		1.00			0.88						1.00	
Satd. Flow (perm)		1451			1305						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	61	0	0	0	0	9	1401	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	87	0	0	0	0	0	1487	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			268						2869	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.07						0.35	
v/c Ratio		0.61			0.32						0.52	
Uniform Delay, d1		25.2			23.7						5.5	
Progression Factor		1.00			1.05						0.24	
Incremental Delay, d2		3.5			0.6						0.6	
Delay (s)		28.7			25.4						1.9	
Level of Service		C			C						A	
Approach Delay (s)		28.7			25.4			0.0			1.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
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			

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	1304	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	1417	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	1463	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						0.46	
Uniform Delay, d1		28.4			28.1						3.1	
Progression Factor		1.00			0.51						0.21	
Incremental Delay, d2		1.9			1.4						0.4	
Delay (s)		30.3			15.8						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.3			15.8			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	72	0	0	0	0	131	1167	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			1823						4353	
Flt Permitted		1.00			0.84						1.00	
Satd. Flow (perm)		1831			1557						4353	
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	76	0	0	0	0	138	1228	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	136	0	0	0	0	0	1395	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	11%	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			456						2581	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.32	
v/c Ratio		0.22			0.30						0.54	
Uniform Delay, d1		18.7			19.2						8.5	
Progression Factor		1.00			0.96						0.84	
Incremental Delay, d2		0.9			1.6						0.7	
Delay (s)		19.6			20.0						7.9	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.0			0.0			7.9	
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	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	28	151	0	0	0	0	21	337	893
Ideal Flow (vphpl)	1900	1900	1900	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					0.99						1.00	1.00
Satd. Flow (prot)					1320						2400	1312
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1320						2400	1312
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	161	0	0	0	0	22	359	950
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	164	164
Lane Group Flow (vph)	0	0	0	0	191	0	0	0	0	0	692	311
Heavy Vehicles (%)	2%	8%	10%	64%	5%	2%	2%	2%	2%	0%	13%	12%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					15.7						45.3	45.3
Effective Green, g (s)					16.2						45.8	45.8
Actuated g/C Ratio					0.23						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)					305						1570	858
v/s Ratio Prot												
v/s Ratio Perm					0.14						0.29	0.24
v/c Ratio					0.63						0.44	0.36
Uniform Delay, d1					24.2						5.9	5.5
Progression Factor					0.81						0.53	1.74
Incremental Delay, d2					3.9						0.8	1.0
Delay (s)					23.5						3.9	10.5
Level of Service					C						A	B
Approach Delay (s)		0.0			23.5			0.0			6.3	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.4	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	53.0%	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	1353	22	0	0	0	0	0	0	19	326	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)		3000									2594	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3000									2594	
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	1555	25	0	0	0	0	0	0	22	375	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	1579	0	0	0	0	0	0	0	0	394	0
Heavy Vehicles (%)	5%	8%	10%	2%	2%	2%	2%	6%	16%	0%	19%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		40.0									21.0	
Effective Green, g (s)		40.5									21.5	
Actuated g/C Ratio		0.58									0.31	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1736									797	
v/s Ratio Prot		c0.53										
v/s Ratio Perm											0.15	
v/c Ratio		0.91									0.49	
Uniform Delay, d1		13.1									19.8	
Progression Factor		0.74									1.40	
Incremental Delay, d2		6.9									0.4	
Delay (s)		16.6									28.2	
Level of Service		B									C	
Approach Delay (s)		16.6			0.0			0.0			28.2	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	18.9	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	58.7%	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)	118	657	0	0	0	0	0	1457	517	0	0	0
Ideal Flow (vphpl)	1900	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	1534	544	0	0	0
RTOR Reduction (vph)	0	13	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	803	0	0	0	0	0	1534	507	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	12%	5%	4%	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							0.46			
v/c Ratio		0.65						0.81	0.74			
Uniform Delay, d1		22.7						10.3	9.4			
Progression Factor		0.88						1.81	1.98			
Incremental Delay, d2		1.2						3.2	5.8			
Delay (s)		21.1						21.9	24.5			
Level of Service		C						C	C			
Approach Delay (s)		21.1			0.0			22.6			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	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	673	411	76	1403	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)					3114			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3114			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	694	424	78	1446	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	1100	0	0	1518	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	12%	5%	4%	4%	4%	5%	10%	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					1.01			0.96				
Uniform Delay, d1					22.8			15.6				
Progression Factor					1.00			0.75				
Incremental Delay, d2					29.5			10.7				
Delay (s)					52.2			22.4				
Level of Service					D			C				
Approach Delay (s)		0.0			52.2			22.4			0.0	
Approach LOS		A			D			C			A	

Intersection Summary			
HCM Average Control Delay	35.0	HCM Level of Service	D
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	1234	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	1327	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	1670	0
Heavy Vehicles (%)	2%	2%	2%	19%	4%	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									0.72	
Incremental Delay, d2		1.3									0.7	
Delay (s)		27.1									4.5	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			4.5	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.2	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	444	296	0	0	0	0	0	1268	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)				1104	3077						4415	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1104	3077						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	483	322	0	0	0	0	0	1378	68
RTOR Reduction (vph)	0	0	0	24	24	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	237	520	0	0	0	0	0	1440	0
Heavy Vehicles (%)	2%	2%	2%	19%	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)				319	888						2636	
v/s Ratio Prot				c0.21	0.17						c0.33	
v/s Ratio Perm												
v/c Ratio				0.74	0.59						0.55	
Uniform Delay, d1				22.5	21.3						8.4	
Progression Factor				1.01	1.10						1.00	
Incremental Delay, d2				2.8	0.3						0.8	
Delay (s)				25.7	23.8						9.2	
Level of Service				C	C						A	
Approach Delay (s)		0.0			24.4			0.0			9.2	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.7	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

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1234	36	28	1023	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	3342		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3126		1727	3342		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	1452	42	33	1204	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	1506	0	33	1206	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	8%	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	2314		261	259			90	
v/s Ratio Prot				0.02	c0.36		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.52		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.7		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.55		1.00	1.00			1.00	
Incremental Delay, d2		3.3		2.9	0.7		22.4	19.9			1.7	
Delay (s)		20.4		59.5	5.4		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.4			6.9			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	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1571	102	53	1075	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	3343		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	3343		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	1636	106	55	1120	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	1739	0	55	1120	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	13%	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	1907		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	0.93		0.50	0.59		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.8		53.3	16.4		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	8.4		2.5	1.3		21.0	2.2			2.1	
Delay (s)	42.3	22.6		55.9	17.7		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		22.9			19.5			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.4	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	65.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	919	3	516	859	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		2935	1517		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3260		2935	1517		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1135	4	637	1060	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1139	0	1156	541	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	13%	7%	14%	14%	2%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	36.9		39.6	88.5		39.6
Effective Green, g (s)	38.9		41.6	88.5		41.6
Actuated g/C Ratio	0.44		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)	1433		1380	1517		1248
v/s Ratio Prot	c0.35		c0.39	0.36		0.14
v/s Ratio Perm						
v/c Ratio	0.79		0.84	0.36		0.30
Uniform Delay, d1	21.4		20.5	0.0		14.5
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	3.0		4.5	0.7		0.1
Delay (s)	24.4		25.0	0.7		14.6
Level of Service	C		C	A		B
Approach Delay (s)	24.4		17.3		14.6	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	88.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.7%	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)	177	204	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	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	308	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	503	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	541	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		1147	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1147	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		177	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	544	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	201
Volume to Capacity	0.35	0.00	0.05
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.0	0.1	24.0
Lane LOS		A	C
Approach Delay (s)	0.0	0.1	24.0
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	39.4%	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	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	574	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	586			601			1212	1208	603	1202	1203	581
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	586			601			1212	1208	603	1202	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			100	99	100	94	99	98
cM capacity (veh/h)	974			959			153	182	497	155	178	505

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	587	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	974	959	182	222
Volume to Capacity	0.01	0.00	0.01	0.08
Queue Length 95th (ft)	1	0	0	7
Control Delay (s)	0.2	0.1	24.9	22.7
Lane LOS	A	A	C	C
Approach Delay (s)	0.2	0.1	24.9	22.7
Approach LOS			C	C

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	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	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			602			1176	1176	602	1176	1176	569
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570			602			1176	1176	602	1176	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			99	100	100	99	100	100
cM capacity (veh/h)	988			961			168	193	500	168	191	522

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	603	571	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	988	961	251	254
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	19.5	19.3
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	19.5	19.3
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	39.9%	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	468	34	10	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	514	37	11	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			552			1212	1184	535	1184	1197	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			552			1212	1184	535	1184	1197	523
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
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 %	95			99			95	99	100	88	99	94
cM capacity (veh/h)	1021			984			142	179	548	155	174	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	602	537	11	54
Volume Left	51	11	7	19
Volume Right	37	12	2	34
cSH	1021	984	176	286
Volume to Capacity	0.05	0.01	0.06	0.19
Queue Length 95th (ft)	4	1	5	17
Control Delay (s)	1.3	0.3	26.9	20.5
Lane LOS	A	A	D	C
Approach Delay (s)	1.3	0.3	26.9	20.5
Approach LOS			D	C

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	487	0	0	27	488
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	530
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			589	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			589	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)			462	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	529	29	530
Volume Left	0	29	0
Volume Right	529	0	0
cSH	1700	1578	1700
Volume to Capacity	0.31	0.02	0.31
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.4	
Approach LOS			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	500	5	0	16	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	18	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	6.5	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	89	100	100
cM capacity (veh/h)	1585		149	164	168	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	366	189	18
Volume Left	366	183	0
Volume Right	0	5	0
cSH	1585	1585	164
Volume to Capacity	0.35	0.35	0.11
Queue Length 95th (ft)	39	39	9
Control Delay (s)	8.5	8.3	29.5
Lane LOS	A	A	D
Approach Delay (s)	8.4		29.5
Approach LOS			D

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	24.4%	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	492	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	559	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	411	609	0	599	598	291	0			582		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	411	609	0	599	598	291	0			582		
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 %	93	99	100	100	53	99	99			100		
cM capacity (veh/h)	331	409	1091	382	413	709	1600			988		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	293	302
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	339	420	1600	1700
Volume to Capacity	0.08	0.48	0.01	0.18
Queue Length 95th (ft)	7	63	1	0
Control Delay (s)	16.5	21.1	0.4	0.0
Lane LOS	C	C	A	
Approach Delay (s)	16.5	21.1	0.2	
Approach LOS	C	C		

Intersection Summary				
Average Delay		5.8		
Intersection Capacity Utilization		37.2%	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	506	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	527	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	284	543	2	545	540	266	0			532		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	284	543	2	545	540	266	0			532		
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 %	99	99	100	100	96	100	100			100		
cM capacity (veh/h)	629	448	1086	419	450	738	1593			1031		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	269	269
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	530	470	1593	1700
Volume to Capacity	0.03	0.04	0.00	0.16
Queue Length 95th (ft)	2	3	0	0
Control Delay (s)	12.0	13.0	0.2	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	13.0	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		0.8		
Intersection Capacity Utilization		27.9%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	19	470	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	22	547	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	382	605	4	603	601	281	3			557		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	382	605	4	603	601	281	3			557		
tC, single (s)	7.9	6.9	7.2	7.6	6.9	7.3	4.3			4.3		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.4	3.6	4.2	3.5	2.3			2.3		
p0 queue free %	97	98	100	100	72	99	99			100		
cM capacity (veh/h)	385	367	1034	362	369	663	1571			946		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	295	280
Volume Left	12	0	22	0
Volume Right	0	9	0	7
cSH	378	383	1571	1700
Volume to Capacity	0.05	0.30	0.01	0.16
Queue Length 95th (ft)	4	31	1	0
Control Delay (s)	15.0	18.3	0.7	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.0	18.3	0.3	
Approach LOS	C	C		

Intersection Summary				
Average Delay		3.6		
Intersection Capacity Utilization		31.5%	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	3	84	22	0	0	0	0	3	333	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	26	0	0	0	0	4	396	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	0.94	0.94	0.94	0.94	0.94		0.94					
vC, conflicting volume	424	418	206	223	423	7	409			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	269	263	38	56	268	7	253			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	4.1	3.4	2.2			2.3		
p0 queue free %	100	98	100	88	96	100	100			100		
cM capacity (veh/h)	567	572	927	840	586	1055	1232			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	126	202	208
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	619	771	1541	1700
Volume to Capacity	0.03	0.16	0.00	0.12
Queue Length 95th (ft)	2	15	0	0
Control Delay (s)	11.0	10.6	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.0	10.6	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.8		
Intersection Capacity Utilization		30.9%	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	394	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	424	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	461	453	220	245	459	4	437			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	461	453	220	245	459	4	437			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	98	100	100			99		
cM capacity (veh/h)	476	502	790	674	498	1080	1120			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	223	225
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	529	589	1576	1700
Volume to Capacity	0.03	0.05	0.01	0.13
Queue Length 95th (ft)	2	4	1	0
Control Delay (s)	12.0	11.4	0.4	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	11.4	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization		30.2%	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	349	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	371	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	440			0			455	434	222	232	468	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	440			0			455	434	222	232	468	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	94	100	81	91	100
cM capacity (veh/h)	1116			1565			456	514	788	667	489	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	199	255	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	520	611
Volume to Capacity	0.01	0.15	0.06	0.28
Queue Length 95th (ft)	1	0	5	29
Control Delay (s)	0.6	0.0	12.4	13.2
Lane LOS	A		B	B
Approach Delay (s)	0.3		12.4	13.2
Approach LOS			B	B

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	34.3%	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	0	0	0	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	0	0	0	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	49			29			70	78	49	70	70	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	49			29			70	78	49	70	70	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)	1571			1584			922	658	1020	908	810	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	49	0	5
Volume Left	0	0	0	5
Volume Right	17	0	0	0
cSH	1571	1584	1700	908
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	0.0	9.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	9.0
Approach LOS			A	A

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	13.3%	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	44	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	48	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	61	48	49			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	48	49			
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)	944	1020	1571			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	49
Volume Left	1	1	0
Volume Right	1	0	1
cSH	981	1571	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

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	437	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	502	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	502			456			1092	1044	454	1052	1049	506
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	502			456			1092	1044	454	1052	1049	506
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			89	98	99	97	100	91
cM capacity (veh/h)	1017			1115			163	212	588	186	210	549

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	509	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	1017	1700	1115	1700	198	455
Volume to Capacity	0.04	0.27	0.00	0.30	0.14	0.12
Queue Length 95th (ft)	3	0	0	0	12	10
Control Delay (s)	8.7	0.0	8.2	0.0	26.0	14.0
Lane LOS	A		A		D	B
Approach Delay (s)	0.7		0.1		26.0	14.0
Approach LOS					D	B

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

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	388	98	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	422	107	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	528			372			943	964	366	960	916	475
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			372			943	964	366	960	916	475
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			96	94	94	73	98	95
cM capacity (veh/h)	999			1144			210	236	653	206	264	592

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	545	65	92
Volume Left	18	16	9	57
Volume Right	11	107	41	29
cSH	999	1144	385	265
Volume to Capacity	0.02	0.01	0.17	0.35
Queue Length 95th (ft)	1	1	15	38
Control Delay (s)	0.6	0.4	16.2	25.7
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	16.2	25.7
Approach LOS			C	D

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	49.8%	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	281	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	316	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	316			326			356	672	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	316			326			356	672	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	90	95	100	100	100
cM capacity (veh/h)	1217			596			591	371	716	485	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	316	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	316	33
cSH	1217	1700	596	1700	481
Volume to Capacity	0.01	0.19	0.01	0.19	0.14
Queue Length 95th (ft)	1	0	1	0	12
Control Delay (s)	8.0	0.0	11.1	0.0	13.7
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.2		13.7
Approach LOS					B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

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

8/12/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	240	0	37	0	0	0	31	228	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)	282	0	44	0	0	0	36	268	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			44		605	608	0	873	586	22
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			44		605	608	0	873	586	22
tC, single (s)	4.7			4.1		7.6	6.5	6.9	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.8			2.2		4.0	4.0	3.9	3.5	4.0	3.3
p0 queue free %	78			100		100	89	71	98	89	100
cM capacity (veh/h)	1305			1565		265	318	924	148	333	1061

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	326	0	305	40
Volume Left	282	0	0	2
Volume Right	44	0	268	0
cSH	1305	1700	753	310
Volume to Capacity	0.22	0.00	0.40	0.13
Queue Length 95th (ft)	21	0	49	11
Control Delay (s)	7.6	0.0	13.0	18.3
Lane LOS	A		B	C
Approach Delay (s)	7.6	0.0	13.0	18.3
Approach LOS			B	C

Intersection Summary			
Average Delay	10.7		
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	110	120	0	49	178	174
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	120	130	0	53	193	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			250		238	185
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			250		238	185
tC, single (s)			4.1		6.9	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.0	3.3
p0 queue free %			100		70	78
cM capacity (veh/h)			1327		654	863

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	250	53	383
Volume Left	0	0	193
Volume Right	130	0	189
cSH	1700	1327	743
Volume to Capacity	0.15	0.00	0.51
Queue Length 95th (ft)	0	0	75
Control Delay (s)	0.0	0.0	14.9
Lane LOS			B
Approach Delay (s)	0.0	0.0	14.9
Approach LOS			B

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	0	58	0	0	58	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	63	0	0	63	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			63		32	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			63		32	32
tC, single (s)			4.1		7.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.4	3.3
p0 queue free %			100		92	100
cM capacity (veh/h)			1540		782	1042

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	63	0	63
Volume Left	0	0	63
Volume Right	63	0	0
cSH	1700	1700	782
Volume to Capacity	0.04	0.00	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.0	10.0
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.0
Approach LOS			B

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	13.6%	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)	11	460	4	15	559	31	33	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			0.96	1.00		0.97	
Satd. Flow (prot)		1560			1653			1780	1538		1747	
Flt Permitted		0.99			0.99			0.73	1.00		0.79	
Satd. Flow (perm)		1540			1633			1348	1538		1420	
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	495	4	16	601	33	35	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	511	0	0	649	0	0	43	4	0	44	0
Heavy Vehicles (%)	7%	22%	7%	2%	15%	2%	2%	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)		28.8			28.8			5.9	5.9		5.9	
Effective Green, g (s)		29.3			29.3			6.4	6.4		6.4	
Actuated g/C Ratio		0.67			0.67			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)		1033			1095			197	225		208	
v/s Ratio Prot												
v/s Ratio Perm		0.33			c0.40			c0.03	0.00		0.03	
v/c Ratio		0.49			0.59			0.22	0.02		0.21	
Uniform Delay, d1		3.5			3.9			16.4	16.0		16.4	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.4			0.9			0.6	0.0		0.5	
Delay (s)		3.9			4.8			17.0	16.0		16.9	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.9			4.8			16.6			16.9	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	43.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	130	266	19	131
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	148	302	22	149
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		801	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					598	
vCu, unblocked vol			220		801	203
tC, single (s)			5.1		6.5	7.2
tC, 2 stage (s)					5.5	
tF (s)			3.1		3.6	4.2
p0 queue free %			84		95	77
cM capacity (veh/h)			942		423	647

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	148	302	170
Volume Left	0	0	148	0	22
Volume Right	0	17	0	0	149
cSH	1700	1700	942	1700	607
Volume to Capacity	0.12	0.01	0.16	0.18	0.28
Queue Length 95th (ft)	0	0	14	0	29
Control Delay (s)	0.0	0.0	9.5	0.0	13.2
Lane LOS			A		B
Approach Delay (s)	0.0		3.1		13.2
Approach LOS					B

Intersection Summary			
Average Delay	4.4		
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 (vph)	119	1451	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)		3230						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3230						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	1560	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	1700	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	6%	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)		2533						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.53									c0.03	
v/c Ratio		0.67						0.19			0.33	
Uniform Delay, d1		3.4						28.8			29.3	
Progression Factor		1.00						1.00			0.55	
Incremental Delay, d2		1.4						0.3			0.6	
Delay (s)		4.9						29.1			16.7	
Level of Service		A						C			B	
Approach Delay (s)		4.9			0.0			29.1			16.7	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.6	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	58.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1463	71	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)		3218						1711			1621	
Flt Permitted		1.00						1.00			0.57	
Satd. Flow (perm)		3218						1711			954	
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	1721	84	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	1820	0	0	0	0	0	225	0	0	187	0
Heavy Vehicles (%)	2%	6%	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)		45.5						15.5			15.5	
Effective Green, g (s)		45.5						15.5			15.5	
Actuated g/C Ratio		0.66						0.22			0.22	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		2122						384			214	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.57									c0.20	
v/c Ratio		0.86						0.59			0.87	
Uniform Delay, d1		9.2						23.9			25.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		3.6						2.3			30.1	
Delay (s)		12.8						26.2			55.9	
Level of Service		B						C			E	
Approach Delay (s)		12.8			0.0			26.2			55.9	
Approach LOS		B			A			C			E	

Intersection Summary			
HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1457	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)		3230						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3230						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	1502	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1543	0	0	0	0	0	28	0	0	55	0
Heavy Vehicles (%)	2%	6%	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)		38.7						4.6			4.6	
Effective Green, g (s)		39.2						5.1			5.1	
Actuated g/C Ratio		0.75						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)		2421						156			132	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.48									c0.04	
v/c Ratio		0.64						0.18			0.42	
Uniform Delay, d1		3.1						21.7			22.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.6						0.6			2.1	
Delay (s)		3.7						22.2			24.3	
Level of Service		A						C			C	
Approach Delay (s)		3.7			0.0			22.2			24.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	52.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
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)	52	1481	26	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)	54	1527	27	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			1554			1671	1647	777	924	1661	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1554			1671	1647	777	924	1661	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	66	89	69	51	100
cM capacity (veh/h)	1607			422			37	94	338	146	95	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	817	790	69	92
Volume Left	54	0	0	45
Volume Right	0	27	37	0
cSH	1607	1700	154	115
Volume to Capacity	0.03	0.46	0.45	0.80
Queue Length 95th (ft)	3	0	51	115
Control Delay (s)	0.9	0.0	46.3	106.8
Lane LOS	A		E	F
Approach Delay (s)	0.5		46.3	106.8
Approach LOS			E	F

Intersection Summary			
Average Delay	7.8		
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	1161	12	0	0	0	0	357	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	3172						3459				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3172						3459				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	1262	13	0	0	0	0	388	9	0	0	0
RTOR Reduction (vph)	46	1	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	62	1274	0	0	0	0	0	395	0	0	0	0
Heavy Vehicles (%)	3%	8%	3%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	27.3	27.3						11.7				
Effective Green, g (s)	28.3	28.3						12.7				
Actuated g/C Ratio	0.58	0.58						0.26				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	1012	1832						897				
v/s Ratio Prot		c0.40						c0.11				
v/s Ratio Perm	0.04											
v/c Ratio	0.06	0.70						0.44				
Uniform Delay, d1	4.5	7.3						15.2				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	1.2						0.3				
Delay (s)	4.6	8.5						15.5				
Level of Service	A	A						B				
Approach Delay (s)		8.2			0.0			15.5			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	49.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.4%	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	1204	70	0	0	0	0	27	345	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					0.87	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2764	1300					1555	1519		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.67	
Satd. Flow (perm)		2764	1300					1555	1519		1248	
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	1295	75	0	0	0	0	29	371	44	34	0
RTOR Reduction (vph)	0	0	10	0	0	0	0	30	30	0	0	0
Lane Group Flow (vph)	0	1313	65	0	0	0	0	173	167	0	78	0
Heavy Vehicles (%)	6%	11%	6%	2%	2%	2%	2%	2%	1%	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)		47.9	47.9					13.1	13.1		13.1	
Effective Green, g (s)		48.4	48.4					13.6	13.6		13.6	
Actuated g/C Ratio		0.69	0.69					0.19	0.19		0.19	
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)		1911	899					302	295		242	
v/s Ratio Prot		c0.47						c0.11				
v/s Ratio Perm			0.05						0.11		0.06	
v/c Ratio		0.69	0.07					0.57	0.57		0.32	
Uniform Delay, d1		6.3	3.5					25.6	25.5		24.2	
Progression Factor		0.39	0.38					1.00	1.00		1.00	
Incremental Delay, d2		1.7	0.1					2.6	2.5		0.8	
Delay (s)		4.2	1.5					28.2	28.0		25.0	
Level of Service		A	A					C	C		C	
Approach Delay (s)		4.1			0.0			28.1			25.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	10.1	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	63.0%	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)	23	1175	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)		2759						1314			1462	
Flt Permitted		1.00						1.00			0.88	
Satd. Flow (perm)		2759						1314			1306	
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	1237	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	38	0	0	0	0
Lane Group Flow (vph)	0	1285	0	0	0	0	0	66	0	0	18	0
Heavy Vehicles (%)	6%	11%	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)		54.0						8.0			8.0	
Effective Green, g (s)		54.0						8.0			8.0	
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)		2128						150			149	
v/s Ratio Prot								c0.05				
v/s Ratio Perm		0.47									0.01	
v/c Ratio		0.60						0.44			0.12	
Uniform Delay, d1		3.4						28.9			27.8	
Progression Factor		0.45						1.00			1.00	
Incremental Delay, d2		0.7						2.1			0.4	
Delay (s)		2.2						31.0			28.2	
Level of Service		A						C			C	
Approach Delay (s)		2.2			0.0			31.0			28.2	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.7	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	47.3%	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	1034	16	0	0	0	0	0	29	289	204	0
Ideal Flow (vphpl)	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)		2736							1289	1681	1403	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2736							1289	1681	1403	
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	1088	17	0	0	0	0	0	31	304	215	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	170	12	0
Lane Group Flow (vph)	0	1103	0	0	0	0	0	0	4	85	252	0
Heavy Vehicles (%)	6%	12%	6%	2%	2%	2%	2%	1%	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)		29.5							9.5	17.5	17.5	
Effective Green, g (s)		30.0							10.0	18.0	18.0	
Actuated g/C Ratio		0.43							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)		1173							184	432	361	
v/s Ratio Prot		c0.40							c0.00	0.05	c0.18	
v/s Ratio Perm												
v/c Ratio		0.94							0.02	0.20	0.70	
Uniform Delay, d1		19.1							25.8	20.3	23.5	
Progression Factor		1.13							1.00	1.00	1.00	
Incremental Delay, d2		14.1							0.2	1.0	10.7	
Delay (s)		35.7							26.0	21.4	34.2	
Level of Service		D							C	C	C	
Approach Delay (s)		35.7			0.0			26.0			27.9	
Approach LOS		D			A			C			C	

Intersection Summary			
HCM Average Control Delay	33.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	511	12	0	0	0	0	68	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						0.96		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2578						1446		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2578						1446		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	544	13	0	0	0	0	72	27	489	50	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	0	562	0	0	0	0	0	79	0	269	270	0
Heavy Vehicles (%)	6%	19%	6%	2%	2%	2%	2%	1%	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)		24.0						7.6		24.9	24.9	
Effective Green, g (s)		24.5						8.1		25.4	25.4	
Actuated g/C Ratio		0.35						0.12		0.36	0.36	
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)		902						167		610	493	
v/s Ratio Prot								c0.05		0.16	c0.20	
v/s Ratio Perm		0.22										
v/c Ratio		0.62						0.47		0.44	0.55	
Uniform Delay, d1		18.9						28.9		16.9	17.7	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.3						2.1		2.3	4.3	
Delay (s)		20.3						31.2		19.2	22.1	
Level of Service		C						C		B	C	
Approach Delay (s)		20.3			0.0			31.2			20.6	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.0%	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	437	0	626	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)		1552		1906		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1552		1906		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	486	0	696	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	486	0	696	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	20%	2%	13%	3%	3%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		33.2		33.2		
Effective Green, g (s)		33.2		33.2		
Actuated g/C Ratio		0.77		0.77		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1193		1465		
v/s Ratio Prot		0.31		c0.37		
v/s Ratio Perm						
v/c Ratio		0.41		0.48		
Uniform Delay, d1		1.7		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.2		0.2		
Delay (s)		1.9		2.1		
Level of Service		A		A		
Approach Delay (s)	1.9			2.1	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	2.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	43.2	Sum of lost time (s)	10.0
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	0	0	13	1010	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)					3276			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3276			3045			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	1052	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	55	0
Lane Group Flow (vph)	0	0	0	0	1088	0	0	189	0	0	292	0
Heavy Vehicles (%)	2%	2%	2%	3%	10%	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)					48.5			12.5			12.5	
Effective Green, g (s)					49.0			13.0			13.0	
Actuated g/C Ratio					0.70			0.19			0.19	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2293			566			556	
v/s Ratio Prot											c0.10	
v/s Ratio Perm					0.33			0.06				
v/c Ratio					0.47			0.33			0.52	
Uniform Delay, d1					4.7			24.7			25.7	
Progression Factor					1.48			1.02			1.00	
Incremental Delay, d2					0.6			0.3			0.9	
Delay (s)					7.6			25.5			26.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			7.6			25.5			26.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1312	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)					3200			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3200			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	1396	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	38
Lane Group Flow (vph)	0	0	0	0	1429	0	0	419	0	0	54	252
Heavy Vehicles (%)	2%	2%	2%	2%	7%	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)					1966			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.45			c0.25				0.16
v/c Ratio					0.73			0.92			0.12	0.58
Uniform Delay, d1					9.4			24.8			19.2	22.0
Progression Factor					0.70			1.00			1.00	1.00
Incremental Delay, d2					2.2			26.1			0.5	5.4
Delay (s)					8.9			50.8			19.7	27.4
Level of Service					A			D			B	C
Approach Delay (s)		0.0			8.9			50.8			26.2	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.6	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	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1248	92	32	80	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		0.99			1.00	
Satd. Flow (prot)					3405	1553		1818			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3405	1553		1541			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	1314	97	34	84	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1360	57	0	118	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	6%	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)					32.8	32.8		15.3			15.3	
Effective Green, g (s)					32.8	32.8		15.3			15.3	
Actuated g/C Ratio					0.58	0.58		0.27			0.27	
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)					1991	908		420			489	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.40	0.04		0.08				
v/c Ratio					0.68	0.06		0.28			0.61	
Uniform Delay, d1					8.1	5.0		16.1			17.8	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					1.0	0.0		0.4			2.3	
Delay (s)					9.0	5.1		16.4			20.1	
Level of Service					A	A		B			C	
Approach Delay (s)		0.0			8.8			16.4			20.1	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1408	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)					3174			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3174			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	1498	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	1538	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	8%	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)					2400			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.48			c0.02				
v/c Ratio					0.64			0.35			0.29	
Uniform Delay, d1					2.3			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.6			2.8			2.0	
Delay (s)					2.9			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.9			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.7%	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	1299	12	52	18	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	1427	13	57	20	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	1441			0			828	1533	0	1536	1526	720
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1441			0			828	1533	0	1536	1526	720
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			74	83	100	100	83	97
cM capacity (veh/h)	467			1622			217	113	1084	68	115	375

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	760	727	77	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	175	156
Volume to Capacity	0.03	0.43	0.44	0.20
Queue Length 95th (ft)	2	0	50	18
Control Delay (s)	0.8	0.0	40.6	33.8
Lane LOS	A		E	D
Approach Delay (s)	0.4		40.6	33.8
Approach LOS			E	D

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	54.7%	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)	0	0	0	0	1287	2	418	18	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)					3205		1603	1613				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3205		1603	1613				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	1446	2	470	20	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	1448	0	88	90	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	7%	2%	7%	7%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					31.3		9.0	9.0				0.7
Effective Green, g (s)					32.3		10.0	10.0				1.7
Actuated g/C Ratio					0.58		0.18	0.18				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)					1849		286	288				49
v/s Ratio Prot					c0.45							
v/s Ratio Perm							0.05	0.06				c0.00
v/c Ratio					0.78		0.31	0.31				0.00
Uniform Delay, d1					9.1		20.0	20.0				26.3
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					2.2		0.6	0.6				0.0
Delay (s)					11.4		20.6	20.6				26.4
Level of Service					B		C	C				C
Approach Delay (s)		0.0			11.4			20.6			26.4	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	13.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	56.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.4%	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	1304	177	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	1373	186	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	1373				1373	686
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1373				1373	686
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)	496				134	385

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	686	686	186	89
Volume Left	0	0	0	0
Volume Right	0	0	186	89
cSH	1700	1700	1700	385
Volume to Capacity	0.40	0.40	0.11	0.23
Queue Length 95th (ft)	0	0	0	22
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	0.9		
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	462	1159	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)	476	1195	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			476	476	476	1671	1671	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			476	476	476	1671	1671	
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)			488	589	499	96	384	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	875	797	8	101
Volume Left	0	0	8	0
Volume Right	398	797	0	0
cSH	1700	1700	499	96
Volume to Capacity	0.51	0.47	0.02	1.05
Queue Length 95th (ft)	0	0	1	162
Control Delay (s)	0.0	0.0	12.3	188.7
Lane LOS			B	F
Approach Delay (s)	0.0		175.4	
Approach LOS			F	

Intersection Summary			
Average Delay	10.8		
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	75	0	0	1279	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)	1787			3343		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1787			3343		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	0	0	1390	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	82	0	0	1390	0	508
Heavy Vehicles (%)	1%	2%	12%	8%	3%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	15.9			52.2		77.1
Effective Green, g (s)	16.4			52.7		77.1
Actuated g/C Ratio	0.21			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	380			2285		2787
v/s Ratio Prot	c0.05			c0.42		
v/s Ratio Perm						c0.18
v/c Ratio	0.22			0.61		0.18
Uniform Delay, d1	25.0			6.6		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			1.1		0.1
Delay (s)	25.1			7.7		0.1
Level of Service	C			A		A
Approach Delay (s)	25.1			7.7	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	4.0
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	718	584	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)			1558	1845	3467	
Flt Permitted			0.37	1.00	1.00	
Satd. Flow (perm)			603	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	748	608	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	748	608	518	0
Heavy Vehicles (%)	2%	2%	12%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			57.2	61.7	25.8	
Effective Green, g (s)			58.2	62.2	26.3	
Actuated g/C Ratio			0.75	0.81	0.34	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			850	1488	1183	
v/s Ratio Prot			c0.36	0.33	0.15	
v/s Ratio Perm			c0.30			
v/c Ratio			0.88	0.41	0.44	
Uniform Delay, d1			8.6	2.1	19.7	
Progression Factor			0.73	0.10	1.00	
Incremental Delay, d2			8.7	0.6	0.1	
Delay (s)			14.9	0.9	19.8	
Level of Service			B	A	B	
Approach Delay (s)	0.0			8.6	19.8	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	18.9
Intersection Capacity Utilization	60.5%	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)	1051	230	0	0	0	21	0	509	131	0	0	0
Ideal Flow (vphpl)	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)	1633	1671				1277		2314				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1633	1671				1277		2314				
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)	1130	247	0	0	0	23	0	547	141	0	0	0
RTOR Reduction (vph)	355	96	0	0	0	23	0	23	0	0	0	0
Lane Group Flow (vph)	323	603	0	0	0	0	0	665	0	0	0	0
Heavy Vehicles (%)	5%	4%	2%	0%	16%	3%	5%	31%	19%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	24.9	24.9				2.5		30.6				
Effective Green, g (s)	25.4	25.4				1.5		31.1				
Actuated g/C Ratio	0.36	0.36				0.02		0.44				
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)	593	606				27		1028				
v/s Ratio Prot								c0.29				
v/s Ratio Perm	0.20	0.36				c0.00						
v/c Ratio	0.54	0.99				0.02		0.65				
Uniform Delay, d1	17.7	22.2				33.5		15.2				
Progression Factor	1.12	0.27				1.00		1.00				
Incremental Delay, d2	1.6	23.5				0.1		1.4				
Delay (s)	21.4	29.6				33.6		16.6				
Level of Service	C	C				C		B				
Approach Delay (s)		25.6			33.6			16.6			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	22.7	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	60.1%	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	158	18	33	1555	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			4673				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1270			1631			4673				
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	35	1637	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	1678	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	16%	5%	5%	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			3224				
v/s Ratio Prot					c0.11							
v/s Ratio Perm		0.03						0.36				
v/c Ratio		0.16			0.56			0.52				
Uniform Delay, d1		23.4			25.5			5.2				
Progression Factor		1.03			1.00			0.81				
Incremental Delay, d2		0.3			2.3			0.4				
Delay (s)		24.4			27.7			4.7				
Level of Service		C			C			A				
Approach Delay (s)		24.4			27.7			4.7			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.3	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	52.9%	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

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	52	1620	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		4338				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4338				
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	55	1705	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	1853	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	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		2739				
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		8.3				
Progression Factor		0.93			1.00	1.00		2.04				
Incremental Delay, d2		11.1			0.3	0.3		1.2				
Delay (s)		33.7			20.9	20.8		18.1				
Level of Service		C			C	C		B				
Approach Delay (s)		33.7			20.8			18.1			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.0	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	61.8%	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	1616	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			4193				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4193				
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	1857	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	1938	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			2995				
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	52.0%	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	42	1801	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			4200				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			1418			4200				
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	45	1916	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	1981	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)		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			2466				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.26						0.47				
v/c Ratio		0.87			0.11			0.80				
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			9.0				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.9			9.0			0.0	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	12.6	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	63.7%	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	1773	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	2015	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	2057	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	11%	6%	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)		8.8			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)		26.0			26.6			1.5				
Level of Service		C			C			A				
Approach Delay (s)		26.0			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	1480	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	1644	40
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	81	0	0	77	0	0	0	0	0	1701	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						0.41	
v/c Ratio		0.45			0.51						0.54	
Uniform Delay, d1		28.2			28.4						3.5	
Progression Factor		1.00			0.98						0.65	
Incremental Delay, d2		1.8			2.6						0.6	
Delay (s)		30.0			30.5						2.8	
Level of Service		C			C						A	
Approach Delay (s)		30.0			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	56	0	0	0	0	8	1339	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			1468						4149	
Flt Permitted		1.00			0.88						1.00	
Satd. Flow (perm)		1451			1305						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	61	0	0	0	0	9	1455	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	181	0	0	87	0	0	0	0	0	1542	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			268						2821	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.07						0.37	
v/c Ratio		0.61			0.32						0.55	
Uniform Delay, d1		25.2			23.7						5.7	
Progression Factor		1.00			1.05						0.23	
Incremental Delay, d2		3.5			0.6						0.7	
Delay (s)		28.7			25.4						2.0	
Level of Service		C			C						A	
Approach Delay (s)		28.7			25.4			0.0			2.0	
Approach LOS		C			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	51.8%	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	1354	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
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	1472	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	1519	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			0.50						0.20	
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	72	0	0	0	0	131	1217	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			1823						4319	
Flt Permitted		1.00			0.84						1.00	
Satd. Flow (perm)		1831			1557						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	76	0	0	0	0	138	1281	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	117	0	0	136	0	0	0	0	0	1449	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			456						2561	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.34	
v/c Ratio		0.22			0.30						0.57	
Uniform Delay, d1		18.7			19.2						8.7	
Progression Factor		1.00			0.97						0.82	
Incremental Delay, d2		0.9			1.6						0.8	
Delay (s)		19.6			20.2						8.0	
Level of Service		B			C						A	
Approach Delay (s)		19.6			20.2			0.0			8.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.1%	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	0	0	28	151	0	0	0	0	21	515	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)					1320						2302	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1320						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	161	0	0	0	0	22	548	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	86	149
Lane Group Flow (vph)	0	0	0	0	191	0	0	0	0	0	867	282
Heavy Vehicles (%)	2%	10%	10%	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)					15.7						45.3	45.3
Effective Green, g (s)					16.2						45.8	45.8
Actuated g/C Ratio					0.23						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)					305						1506	916
v/s Ratio Prot												
v/s Ratio Perm					0.14						0.38	0.20
v/c Ratio					0.63						0.58	0.31
Uniform Delay, d1					24.2						6.7	5.2
Progression Factor					0.82						0.89	0.29
Incremental Delay, d2					3.9						1.4	0.7
Delay (s)					23.7						7.3	2.3
Level of Service					C						A	A
Approach Delay (s)		0.0			23.7			0.0			5.8	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	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	1225	22	0	0	0	0	0	0	19	504	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)		3113									2274	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3113									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	1408	25	0	0	0	0	0	0	22	579	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	1432	0	0	0	0	0	0	0	0	597	0
Heavy Vehicles (%)	5%	4%	10%	2%	2%	2%	2%	6%	21%	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)		1628									825	
v/s Ratio Prot		c0.46										
v/s Ratio Perm											0.26	
v/c Ratio		0.88									0.72	
Uniform Delay, d1		14.7									19.3	
Progression Factor		0.81									1.45	
Incremental Delay, d2		6.0									2.6	
Delay (s)		18.0									30.6	
Level of Service		B									C	
Approach Delay (s)		18.0			0.0			0.0			30.6	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	21.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.1%	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)	118	657	0	0	0	0	0	1457	567	0	0	0
Ideal Flow (vphpl)	1900	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	1068			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		4576						3065	1068			
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	1534	597	0	0	0
RTOR Reduction (vph)	0	13	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	803	0	0	0	0	0	1534	560	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	16%	5%	4%	6%	21%	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	659			
v/s Ratio Prot								0.50				
v/s Ratio Perm		0.18							c0.52			
v/c Ratio		0.65						0.81	0.85			
Uniform Delay, d1		22.7						10.3	10.8			
Progression Factor		0.87						1.78	1.92			
Incremental Delay, d2		1.2						3.1	10.7			
Delay (s)		21.0						21.4	31.4			
Level of Service		C						C	C			
Approach Delay (s)		21.0			0.0			24.2			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	23.3	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	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	723	411	76	1403	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)					3048			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3048			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	745	424	78	1446	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	1151	0	0	1518	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	16%	5%	4%	4%	4%	5%	12%	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)					1067			1577				
v/s Ratio Prot					c0.38							
v/s Ratio Perm								0.52				
v/c Ratio					1.08			0.96				
Uniform Delay, d1					22.8			15.6				
Progression Factor					1.00			0.75				
Incremental Delay, d2					51.3			10.7				
Delay (s)					74.1			22.4				
Level of Service					E			C				
Approach Delay (s)		0.0			74.1			22.4			0.0	
Approach LOS		A			E			C			A	

Intersection Summary			
HCM Average Control Delay	44.8	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	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1284	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	1381	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	49	0
Lane Group Flow (vph)	0	313	0	0	0	0	0	0	0	0	1726	0
Heavy Vehicles (%)	2%	2%	2%	24%	4%	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									0.77	
Incremental Delay, d2		1.3									0.7	
Delay (s)		27.1									5.0	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			5.0	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.5	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	494	296	0	0	0	0	0	1268	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)				1060	2996						4415	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1060	2996						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	537	322	0	0	0	0	0	1378	68
RTOR Reduction (vph)	0	0	0	24	24	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	0	0	255	556	0	0	0	0	0	1439	0
Heavy Vehicles (%)	2%	2%	2%	24%	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)				20.8	20.8						40.2	
Effective Green, g (s)				21.3	21.3						40.7	
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	912						2567	
v/s Ratio Prot				c0.24	0.19						c0.33	
v/s Ratio Perm												
v/c Ratio				0.79	0.61						0.56	
Uniform Delay, d1				22.3	20.8						9.1	
Progression Factor				0.96	1.04						1.00	
Incremental Delay, d2				1.2	0.1						0.9	
Delay (s)				22.6	21.7						10.0	
Level of Service				C	C						A	
Approach Delay (s)		0.0			22.0			0.0			10.0	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.5	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	80.8%	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	1234	36	28	1023	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	3342		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3126		1727	3342		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	1452	42	33	1204	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	1506	0	33	1206	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	8%	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	2314		261	259			90	
v/s Ratio Prot				0.02	c0.36		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.52		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.7		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.55		1.00	1.00			1.00	
Incremental Delay, d2		3.3		2.9	0.7		22.4	19.9			1.7	
Delay (s)		20.4		59.5	5.4		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.4			6.9			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	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1571	102	53	1075	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	3343		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	3343		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	1636	106	55	1120	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	1739	0	55	1120	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	16%	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	1907		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	0.93		0.50	0.59		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.8		53.3	16.4		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	8.4		2.5	1.3		21.0	2.2			2.1	
Delay (s)	42.3	22.6		55.9	17.7		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		22.9			19.5			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.4	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	65.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	969	3	516	909	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		2878	1491		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3176		2878	1491		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1196	4	637	1122	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1200	0	1198	561	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	16%	7%	16%	16%	2%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	39.7		41.8	93.5		41.8
Effective Green, g (s)	41.7		43.8	93.5		43.8
Actuated g/C Ratio	0.45		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)	1416		1348	1491		1244
v/s Ratio Prot	c0.38		c0.42	0.38		0.14
v/s Ratio Perm						
v/c Ratio	0.85		0.89	0.38		0.30
Uniform Delay, d1	23.1		22.6	0.0		15.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	4.8		7.5	0.7		0.1
Delay (s)	27.9		30.1	0.7		15.5
Level of Service	C		C	A		B
Approach Delay (s)	27.9		20.7		15.5	
Approach LOS	C		C		B	

Intersection Summary			
HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	93.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.7%	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)	177	204	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	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	308	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)	735	1	3	681	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)	790	1	3	732	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			791		1530	791
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			791		1530	791
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		91	99
cM capacity (veh/h)			803		100	323

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	791	735	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	803	116
Volume to Capacity	0.47	0.00	0.09
Queue Length 95th (ft)	0	0	8
Control Delay (s)	0.0	0.1	39.2
Lane LOS		A	E
Approach Delay (s)	0.0	0.1	39.2
Approach LOS			E

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	48.7%	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	728	0	2	706	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	791	0	2	767	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	779			794			1599	1595	796	1589	1590	775
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	779			794			1599	1595	796	1589	1590	775
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	90	98	98
cM capacity (veh/h)	824			812			81	106	385	83	104	391

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	800	780	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	824	812	106	127
Volume to Capacity	0.01	0.00	0.01	0.15
Queue Length 95th (ft)	1	0	1	12
Control Delay (s)	0.3	0.1	39.3	38.0
Lane LOS	A	A	E	E
Approach Delay (s)	0.3	0.1	39.3	38.0
Approach LOS			E	E

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	731	1	1	701	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	795	1	1	762	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	763			796			1563	1562	795	1563	1562	762
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	763			796			1563	1562	795	1563	1562	762
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)	836			813			90	113	387	90	111	405

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	797	764	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	836	813	146	148
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	30.0	29.8
Lane LOS	A	A	D	D
Approach Delay (s)	0.0	0.0	30.0	29.8
Approach LOS			D	D

Intersection Summary			
Average Delay	0.1		
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)	46	646	34	10	646	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	710	37	11	710	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	724			747			1603	1576	731	1575	1588	719
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	724			747			1603	1576	731	1575	1588	719
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
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 %	94			99			91	98	99	77	99	92
cM capacity (veh/h)	863			830			74	103	424	82	100	427

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	798	733	11	54
Volume Left	51	11	7	19
Volume Right	37	12	2	34
cSH	863	830	95	169
Volume to Capacity	0.06	0.01	0.12	0.32
Queue Length 95th (ft)	5	1	9	32
Control Delay (s)	1.5	0.4	47.8	36.0
Lane LOS	A	A	E	E
Approach Delay (s)	1.5	0.4	47.8	36.0
Approach LOS			E	E

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	665	0	0	27	666
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	723	0	0	29	724
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			783	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			783	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)			356	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	723	29	724
Volume Left	0	29	0
Volume Right	723	0	0
cSH	1700	1578	1700
Volume to Capacity	0.43	0.02	0.43
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	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	678	5	0	16	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)	745	5	0	18	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		1493	1493	1496	0
vC1, stage 1 conf vol			1493	1493	0	
vC2, stage 2 conf vol			0	0	1496	
vCu, unblocked vol	0		1493	1493	1496	0
tC, single (s)	4.3		7.1	6.5	6.5	6.2
tC, 2 stage (s)			6.1	5.5	5.5	
tF (s)	2.4		3.5	4.0	4.0	3.3
p0 queue free %	50		100	78	100	100
cM capacity (veh/h)	1501		69	79	84	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	497	254	18
Volume Left	497	248	0
Volume Right	0	5	0
cSH	1501	1501	79
Volume to Capacity	0.50	0.50	0.22
Queue Length 95th (ft)	72	72	19
Control Delay (s)	9.7	9.6	63.1
Lane LOS	A	A	F
Approach Delay (s)	9.7		63.1
Approach LOS			F

Intersection Summary			
Average Delay	10.9		
Intersection Capacity Utilization	29.5%	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)	21	3	0	0	169	7	12	670	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	761	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	512	811	0	802	800	392	0			784		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	512	811	0	802	800	392	0			784		
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 %	89	99	100	100	39	99	99			100		
cM capacity (veh/h)	227	313	1091	273	316	610	1600			830		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	394	403
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	235	322	1600	1700
Volume to Capacity	0.12	0.62	0.01	0.24
Queue Length 95th (ft)	10	98	1	0
Control Delay (s)	22.3	32.9	0.3	0.0
Lane LOS	C	D	A	
Approach Delay (s)	22.3	32.9	0.2	
Approach LOS	C	D		

Intersection Summary				
Average Delay		7.1		
Intersection Capacity Utilization		42.2%	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	684	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	712	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	377	728	2	731	726	359	0			718		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	377	728	2	731	726	359	0			718		
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 %	99	98	100	100	95	100	100			100		
cM capacity (veh/h)	537	351	1086	308	353	644	1593			879		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	361	361
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	432	371	1593	1700
Volume to Capacity	0.03	0.05	0.00	0.21
Queue Length 95th (ft)	2	4	0	0
Control Delay (s)	13.6	15.2	0.1	0.0
Lane LOS	B	C	A	
Approach Delay (s)	13.6	15.2	0.1	
Approach LOS	B	C		

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		32.9%	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)	10	6	0	0	90	8	19	648	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	22	753	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	486	812	4	810	808	384	3			764		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	486	812	4	810	808	384	3			764		
tC, single (s)	7.9	6.9	7.2	7.6	6.9	7.3	4.3			4.3		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.4	3.6	4.2	3.5	2.3			2.3		
p0 queue free %	96	97	100	100	62	98	99			100		
cM capacity (veh/h)	290	274	1034	255	276	564	1571			785		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	399	384
Volume Left	12	0	22	0
Volume Right	0	9	0	7
cSH	284	288	1571	1700
Volume to Capacity	0.07	0.40	0.01	0.23
Queue Length 95th (ft)	5	45	1	0
Control Delay (s)	18.6	25.5	0.5	0.0
Lane LOS	C	D	A	
Approach Delay (s)	18.6	25.5	0.3	
Approach LOS	C	D		

Intersection Summary				
Average Delay		3.8		
Intersection Capacity Utilization		36.4%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	22	0	0	0	0	3	511	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	26	0	0	0	0	4	608	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	636	630	312	329	635	7	621			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	300	293	0	0	298	7	282			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	4.1	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	95	100	100			100		
cM capacity (veh/h)	498	510	911	852	523	1055	1116			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	126	308	314
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	559	753	1541	1700
Volume to Capacity	0.03	0.17	0.00	0.18
Queue Length 95th (ft)	2	15	0	0
Control Delay (s)	11.7	10.7	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.7	10.7	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.1		
Intersection Capacity Utilization		35.6%	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	572	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	615	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	652	644	316	341	650	4	628			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	652	644	316	341	650	4	628			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	391	686	574	388	1080	950			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	318	320
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	416	480	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	14.0	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	14.0	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	527	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	561	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	630			0			645	623	317	327	657	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	630			0			645	623	317	327	657	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)	948			1565			328	401	685	564	382	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	294	349	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	407	503
Volume to Capacity	0.01	0.21	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	0	0	0	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	0	0	0	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	49			29			70	78	49	70	70	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	49			29			70	78	49	70	70	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)	1571			1584			922	658	1020	908	810	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	49	0	5
Volume Left	0	0	0	5
Volume Right	17	0	0	0
cSH	1571	1584	1700	908
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	0.0	9.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	9.0
Approach LOS			A	A

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	13.3%	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	44	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	48	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	61	48	49			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	48	49			
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)	944	1020	1571			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	49
Volume Left	1	1	0
Volume Right	1	0	1
cSH	981	1571	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

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	571	4	4	615	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	656	5	5	707	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	707			661			1501	1453	659	1461	1459	710
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	707			661			1501	1453	659	1461	1459	710
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 %	95			100			77	97	99	94	100	88
cM capacity (veh/h)	851			937			81	118	448	95	117	419

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	661	5	714	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	851	1700	937	1700	103	307
Volume to Capacity	0.05	0.39	0.00	0.42	0.27	0.18
Queue Length 95th (ft)	4	0	0	0	25	16
Control Delay (s)	9.4	0.0	8.9	0.0	52.4	19.2
Lane LOS	A		A		F	C
Approach Delay (s)	0.5		0.1		52.4	19.2
Approach LOS					F	C

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	510	10	15	566	98	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	554	11	16	615	107	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	722			565			1330	1351	560	1347	1303	668
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	722			565			1330	1351	560	1347	1303	668
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			92	89	92	46	96	94
cM capacity (veh/h)	845			968			109	137	506	105	155	460

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	584	738	65	92
Volume Left	18	16	9	57
Volume Right	11	107	41	29
cSH	845	968	239	144
Volume to Capacity	0.02	0.02	0.27	0.64
Queue Length 95th (ft)	2	1	27	87
Control Delay (s)	0.6	0.4	25.6	66.9
Lane LOS	A	A	D	F
Approach Delay (s)	0.6	0.4	25.6	66.9
Approach LOS			D	F

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	60.3%	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	466	2	4	0	459	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	524	2	4	0	516	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	516			526			556	1072	525	606	557	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	516			526			556	1072	525	606	557	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	83	94	100	100	100
cM capacity (veh/h)	1025			460			435	216	553	331	430	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	526	4	516	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	516	33
cSH	1025	1700	460	1700	304
Volume to Capacity	0.01	0.31	0.01	0.30	0.23
Queue Length 95th (ft)	1	0	1	0	21
Control Delay (s)	8.6	0.0	12.9	0.0	20.3
Lane LOS	A		B		C
Approach Delay (s)	0.2		0.1		20.3
Approach LOS					C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

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

8/12/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	240	0	37	0	0	0	31	228	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)	282	0	44	0	0	0	36	268	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			44		605	608	0	873	586	22
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			44		605	608	0	873	586	22
tC, single (s)	4.7			4.1		7.6	6.5	6.9	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.8			2.2		4.0	4.0	3.9	3.5	4.0	3.3
p0 queue free %	78			100		100	89	71	98	89	100
cM capacity (veh/h)	1305			1565		265	318	924	148	333	1061

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	326	0	305	40
Volume Left	282	0	0	2
Volume Right	44	0	268	0
cSH	1305	1700	753	310
Volume to Capacity	0.22	0.00	0.40	0.13
Queue Length 95th (ft)	21	0	49	11
Control Delay (s)	7.6	0.0	13.0	18.3
Lane LOS	A		B	C
Approach Delay (s)	7.6	0.0	13.0	18.3
Approach LOS			B	C

Intersection Summary			
Average Delay	10.7		
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	110	120	0	99	178	174
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	120	130	0	108	193	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			250		292	185
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			250		292	185
tC, single (s)			4.1		6.9	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.0	3.3
p0 queue free %			100		68	78
cM capacity (veh/h)			1327		607	863

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	250	108	383
Volume Left	0	0	193
Volume Right	130	0	189
cSH	1700	1327	711
Volume to Capacity	0.15	0.00	0.54
Queue Length 95th (ft)	0	0	81
Control Delay (s)	0.0	0.0	15.8
Lane LOS			C
Approach Delay (s)	0.0	0.0	15.8
Approach LOS			C

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	0	58	0	0	58	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	63	0	0	63	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			63		32	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			63		32	32
tC, single (s)			4.1		7.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.4	3.3
p0 queue free %			100		92	100
cM capacity (veh/h)			1540		782	1042

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	63	0	63
Volume Left	0	0	63
Volume Right	63	0	0
cSH	1700	1700	782
Volume to Capacity	0.04	0.00	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.0	10.0
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.0
Approach LOS			B

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	13.6%	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)	11	510	4	15	609	31	33	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			0.96	1.00		0.97	
Satd. Flow (prot)		1500			1601			1780	1538		1747	
Flt Permitted		0.99			0.99			0.73	1.00		0.79	
Satd. Flow (perm)		1481			1582			1348	1538		1420	
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	548	4	16	655	33	35	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	564	0	0	703	0	0	43	3	0	44	0
Heavy Vehicles (%)	7%	27%	7%	2%	19%	2%	2%	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)		34.2			34.2			6.0	6.0		6.0	
Effective Green, g (s)		34.7			34.7			6.5	6.5		6.5	
Actuated g/C Ratio		0.71			0.71			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)		1045			1116			178	203		188	
v/s Ratio Prot												
v/s Ratio Perm		0.38			c0.44			c0.03	0.00		0.03	
v/c Ratio		0.54			0.63			0.24	0.02		0.23	
Uniform Delay, d1		3.4			3.8			19.1	18.6		19.1	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.5			1.1			0.7	0.0		0.6	
Delay (s)		4.0			5.0			19.8	18.6		19.8	
Level of Service		A			A			B	B		B	
Approach Delay (s)		4.0			5.0			19.4			19.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	49.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	180	266	19	181
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	205	302	22	206
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		915	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					711	
vCu, unblocked vol			220		915	203
tC, single (s)			5.1		6.5	7.2
tC, 2 stage (s)					5.5	
tF (s)			3.1		3.6	4.2
p0 queue free %			78		94	68
cM capacity (veh/h)			939		349	646

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	205	302	227
Volume Left	0	0	205	0	22
Volume Right	0	17	0	0	206
cSH	1700	1700	939	1700	598
Volume to Capacity	0.12	0.01	0.22	0.18	0.38
Queue Length 95th (ft)	0	0	21	0	44
Control Delay (s)	0.0	0.0	9.9	0.0	14.7
Lane LOS			A		B
Approach Delay (s)	0.0		4.0		14.7
Approach LOS					B

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	41.6%	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)	119	1323	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)		3345						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3345						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	1423	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	1563	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)		2623						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.47									c0.03	
v/c Ratio		0.60						0.19			0.33	
Uniform Delay, d1		3.1						28.8			29.3	
Progression Factor		1.00						1.00			0.60	
Incremental Delay, d2		1.0						0.3			0.6	
Delay (s)		4.1						29.1			18.2	
Level of Service		A						C			B	
Approach Delay (s)		4.1			0.0			29.1			18.2	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.1	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	54.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1335	71	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			0.65	
Satd. Flow (perm)		3335						1711			1086	
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	1571	84	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	16	0	0	0	0
Lane Group Flow (vph)	0	1669	0	0	0	0	0	220	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)		37.6						15.3			15.3	
Effective Green, g (s)		37.6						15.3			15.3	
Actuated g/C Ratio		0.62						0.25			0.25	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		2059						430			273	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.50									c0.17	
v/c Ratio		0.81						0.51			0.68	
Uniform Delay, d1		8.9						19.6			20.6	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.5						1.0			6.9	
Delay (s)		11.4						20.6			27.6	
Level of Service		B						C			C	
Approach Delay (s)		11.4			0.0			20.6			27.6	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1329	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)		3353						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3353						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	1370	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	1411	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)		34.7						4.5			4.5	
Effective Green, g (s)		35.2						5.0			5.0	
Actuated g/C Ratio		0.73						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)		2449						166			141	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.42									c0.04	
v/c Ratio		0.58						0.17			0.39	
Uniform Delay, d1		3.0						19.7			20.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.3						0.5			1.8	
Delay (s)		3.4						20.2			22.0	
Level of Service		A						C			C	
Approach Delay (s)		3.4			0.0			20.2			22.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	48.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.1%	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)	52	1353	26	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)	54	1395	27	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			1422			1539	1515	711	858	1529	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1422			1539	1515	711	858	1529	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	72	90	74	59	100
cM capacity (veh/h)	1607			475			52	113	373	175	114	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	751	724	69	92
Volume Left	54	0	0	45
Volume Right	0	27	37	0
cSH	1607	1700	181	138
Volume to Capacity	0.03	0.43	0.38	0.67
Queue Length 95th (ft)	3	0	41	91
Control Delay (s)	0.9	0.0	36.6	71.9
Lane LOS	A		E	F
Approach Delay (s)	0.5		36.6	71.9
Approach LOS			E	F

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	1033	12	0	0	0	0	535	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	3356						2935				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3356						2935				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	1123	13	0	0	0	0	582	9	0	0	0
RTOR Reduction (vph)	45	1	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	63	1135	0	0	0	0	0	590	0	0	0	0
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	4%	23%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	25.9	25.9						15.7				
Effective Green, g (s)	26.9	26.9						16.7				
Actuated g/C Ratio	0.52	0.52						0.32				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	913	1750						950				
v/s Ratio Prot		c0.34						c0.20				
v/s Ratio Perm	0.04											
v/c Ratio	0.07	0.65						0.62				
Uniform Delay, d1	6.1	8.9						14.8				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.8						1.3				
Delay (s)	6.2	9.8						16.0				
Level of Service	A	A						B				
Approach Delay (s)		9.5			0.0			16.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	51.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1254	70	0	0	0	0	27	345	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					0.87	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2716	1300					1555	1519		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.68	
Satd. Flow (perm)		2716	1300					1555	1519		1264	
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	1348	75	0	0	0	0	29	371	44	34	0
RTOR Reduction (vph)	0	0	10	0	0	0	0	26	26	0	0	0
Lane Group Flow (vph)	0	1366	65	0	0	0	0	177	171	0	78	0
Heavy Vehicles (%)	6%	13%	6%	2%	2%	2%	2%	2%	1%	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)		47.7	47.7					13.3	13.3		13.3	
Effective Green, g (s)		48.2	48.2					13.8	13.8		13.8	
Actuated g/C Ratio		0.69	0.69					0.20	0.20		0.20	
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)		1870	895					307	299		249	
v/s Ratio Prot		c0.50						c0.11				
v/s Ratio Perm			0.05						0.11		0.06	
v/c Ratio		0.73	0.07					0.58	0.57		0.31	
Uniform Delay, d1		6.8	3.6					25.5	25.4		24.0	
Progression Factor		0.43	0.43					1.00	1.00		1.00	
Incremental Delay, d2		2.1	0.1					2.6	2.6		0.7	
Delay (s)		5.0	1.7					28.1	28.1		24.8	
Level of Service		A	A					C	C		C	
Approach Delay (s)		4.9			0.0			28.1			24.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	10.5	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	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1225	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)		2712						1314			1462	
Flt Permitted		1.00						1.00			0.88	
Satd. Flow (perm)		2712						1314			1309	
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	1289	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	33	0	0	0	0
Lane Group Flow (vph)	0	1337	0	0	0	0	0	71	0	0	18	0
Heavy Vehicles (%)	6%	13%	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)		53.8						8.2			8.2	
Effective Green, g (s)		53.8						8.2			8.2	
Actuated g/C Ratio		0.77						0.12			0.12	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2084						154			153	
v/s Ratio Prot								c0.05				
v/s Ratio Perm		0.49									0.01	
v/c Ratio		0.64						0.46			0.12	
Uniform Delay, d1		3.7						28.8			27.7	
Progression Factor		0.58						1.00			1.00	
Incremental Delay, d2		0.7						2.2			0.3	
Delay (s)		2.8						31.0			28.0	
Level of Service		A						C			C	
Approach Delay (s)		2.8			0.0			31.0			28.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1084	16	0	0	0	0	0	29	289	204	0
Ideal Flow (vphpl)	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)		2689							1289	1681	1403	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2689							1289	1681	1403	
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	1141	17	0	0	0	0	0	31	304	215	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	166	12	0
Lane Group Flow (vph)	0	1156	0	0	0	0	0	0	4	89	252	0
Heavy Vehicles (%)	6%	14%	6%	2%	2%	2%	2%	1%	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)		29.5							9.5	17.5	17.5	
Effective Green, g (s)		30.0							10.0	18.0	18.0	
Actuated g/C Ratio		0.43							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)		1152							184	432	361	
v/s Ratio Prot		c0.43							c0.00	0.05	c0.18	
v/s Ratio Perm												
v/c Ratio		1.00							0.02	0.21	0.70	
Uniform Delay, d1		20.0							25.8	20.4	23.5	
Progression Factor		1.14							1.00	1.00	1.00	
Incremental Delay, d2		25.7							0.2	1.1	10.7	
Delay (s)		48.5							26.0	21.5	34.2	
Level of Service		D							C	C	C	
Approach Delay (s)		48.5			0.0			26.0			28.0	
Approach LOS		D			A			C			C	

Intersection Summary			
HCM Average Control Delay	41.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.2%	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)	7	561	12	0	0	0	0	68	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						0.96		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2477						1446		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2477						1446		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	597	13	0	0	0	0	72	27	489	50	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	0	615	0	0	0	0	0	79	0	269	270	0
Heavy Vehicles (%)	6%	24%	6%	2%	2%	2%	2%	1%	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)		26.3						7.6		22.6	22.6	
Effective Green, g (s)		26.8						8.1		23.1	23.1	
Actuated g/C Ratio		0.38						0.12		0.33	0.33	
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)		948						167		555	449	
v/s Ratio Prot								c0.05		0.16	c0.20	
v/s Ratio Perm		0.25										
v/c Ratio		0.65						0.47		0.48	0.60	
Uniform Delay, d1		17.7						28.9		18.7	19.6	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.5						2.1		3.0	5.9	
Delay (s)		19.3						30.9		21.7	25.5	
Level of Service		B						C		C	C	
Approach Delay (s)		19.3			0.0			30.9			23.6	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.4%	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	487	0	676	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)		1490		1840		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1490		1840		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	541	0	751	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	541	0	751	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	25%	2%	17%	3%	3%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		34.8		34.8		
Effective Green, g (s)		34.8		34.8		
Actuated g/C Ratio		0.78		0.78		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1157		1429		
v/s Ratio Prot		0.36		c0.41		
v/s Ratio Perm						
v/c Ratio		0.47		0.53		
Uniform Delay, d1		1.8		1.9		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.3		0.4		
Delay (s)		2.1		2.2		
Level of Service		A		A		
Approach Delay (s)	2.1			2.2	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	2.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	44.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	882	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	919	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	82	0
Lane Group Flow (vph)	0	0	0	0	955	0	0	189	0	0	265	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)					49.2			11.8			11.8	
Effective Green, g (s)					49.7			12.3			12.3	
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)					2478			534			526	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.27			0.06				
v/c Ratio					0.39			0.35			0.50	
Uniform Delay, d1					4.1			25.4			26.1	
Progression Factor					1.49			1.03			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					6.4			26.5			26.9	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.4			26.5			26.9	
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	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)	0	0	0	14	1184	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	1260	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	52
Lane Group Flow (vph)	0	0	0	0	1293	0	0	419	0	0	54	238
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	0.54
Uniform Delay, d1					8.5			24.8			19.2	21.8
Progression Factor					0.60			1.00			1.00	1.00
Incremental Delay, d2					1.4			26.1			0.5	4.8
Delay (s)					6.5			50.8			19.7	26.6
Level of Service					A			D			B	C
Approach Delay (s)		0.0			6.5			50.8			25.5	
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	81.4%	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)	0	0	0	44	1120	92	32	80	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		0.99			1.00	
Satd. Flow (prot)					3567	1554		1818			1794	
Flt Permitted					1.00	1.00		0.85			1.00	
Satd. Flow (perm)					3567	1554		1575			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	84	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	118	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)					28.9	28.9		14.7			14.7	
Effective Green, g (s)					28.9	28.9		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)					1998	870		449			511	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.34	0.03		0.07				
v/c Ratio					0.61	0.06		0.26			0.59	
Uniform Delay, d1					7.6	5.2		14.3			15.8	
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		14.6			17.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.0			14.6			17.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	51.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	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	18	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	20	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	1396	1386	650
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1300			0			758	1392	0	1396	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	86	100	100	86	97
cM capacity (veh/h)	529			1622			251	138	1084	89	140	417

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	690	657	77	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	207	188
Volume to Capacity	0.03	0.39	0.37	0.17
Queue Length 95th (ft)	2	0	40	15
Control Delay (s)	0.8	0.0	32.3	28.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		32.3	28.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	51.1%	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	596	18	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	0.95				1.00
Satd. Flow (prot)					3361		1394	1412				1611
Flt Permitted					1.00		0.95	0.95				1.00
Satd. Flow (perm)					3361		1394	1412				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	670	20	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	150	150	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1304	0	192	198	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	23%	7%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.6		13.4	13.4				0.7
Effective Green, g (s)					29.6		14.4	14.4				1.7
Actuated g/C Ratio					0.51		0.25	0.25				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)					1724		348	352				47
v/s Ratio Prot					c0.39							
v/s Ratio Perm							0.14	0.14				c0.00
v/c Ratio					0.76		0.55	0.56				0.01
Uniform Delay, d1					11.2		18.8	18.9				27.2
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.9		1.9	2.1				0.0
Delay (s)					13.1		20.7	21.0				27.2
Level of Service					B		C	C				C
Approach Delay (s)		0.0			13.1			20.8			27.2	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	57.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1354	177	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	1425	186	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	1425				1425	713
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1425				1425	713
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	76
cM capacity (veh/h)	473				124	370

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	713	713	186	89
Volume Left	0	0	0	0
Volume Right	0	0	186	89
cSH	1700	1700	1700	370
Volume to Capacity	0.42	0.42	0.11	0.24
Queue Length 95th (ft)	0	0	0	23
Control Delay (s)	0.0	0.0	0.0	17.8
Lane LOS				C
Approach Delay (s)	0.0			17.8
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	462	1209	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)	476	1246	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			476	476	476	1723	1723	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			476	476	476	1723	1723	
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)			488	589	499	89	367	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	892	831	8	101
Volume Left	0	0	8	0
Volume Right	415	831	0	0
cSH	1700	1700	499	89
Volume to Capacity	0.52	0.49	0.02	1.13
Queue Length 95th (ft)	0	0	1	174
Control Delay (s)	0.0	0.0	12.3	222.3
Lane LOS			B	F
Approach Delay (s)	0.0		206.4	
Approach LOS			F	

Intersection Summary			
Average Delay	12.3		
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	75	0	0	1329	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)	1787			3282		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1787			3282		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	0	0	1445	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	82	0	0	1445	0	508
Heavy Vehicles (%)	1%	2%	16%	10%	3%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	15.9			52.2		77.1
Effective Green, g (s)	16.4			52.7		77.1
Actuated g/C Ratio	0.21			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	380			2243		2787
v/s Ratio Prot	c0.05			c0.44		
v/s Ratio Perm						c0.18
v/c Ratio	0.22			0.64		0.18
Uniform Delay, d1	25.0			6.9		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			1.4		0.1
Delay (s)	25.1			8.3		0.1
Level of Service	C			A		A
Approach Delay (s)	25.1			8.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	4.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	768	584	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)			1504	1845	3467	
Flt Permitted			0.37	1.00	1.00	
Satd. Flow (perm)			582	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	800	608	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	800	608	518	0
Heavy Vehicles (%)	2%	2%	16%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			57.2	61.7	25.8	
Effective Green, g (s)			58.2	62.2	26.3	
Actuated g/C Ratio			0.75	0.81	0.34	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			821	1488	1183	
v/s Ratio Prot			c0.40	0.33	0.15	
v/s Ratio Perm			c0.33			
v/c Ratio			0.97	0.41	0.44	
Uniform Delay, d1			11.0	2.1	19.7	
Progression Factor			0.81	0.10	1.00	
Incremental Delay, d2			21.8	0.6	0.1	
Delay (s)			30.6	0.8	19.8	
Level of Service			C	A	B	
Approach Delay (s)	0.0			17.8	19.8	
Approach LOS	A			B	B	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	18.9
Intersection Capacity Utilization	63.3%	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

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	1051	230	0	0	0	21	0	459	131	0	0	0
Ideal Flow (vphpl)	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)	1633	1671				1277		2369				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1633	1671				1277		2369				
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)	1130	247	0	0	0	23	0	494	141	0	0	0
RTOR Reduction (vph)	339	91	0	0	0	23	0	28	0	0	0	0
Lane Group Flow (vph)	339	608	0	0	0	0	0	607	0	0	0	0
Heavy Vehicles (%)	5%	4%	2%	0%	16%	3%	5%	27%	19%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	27.3	27.3				2.4		28.3				
Effective Green, g (s)	27.8	27.8				1.4		28.8				
Actuated g/C Ratio	0.40	0.40				0.02		0.41				
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)	649	664				26		975				
v/s Ratio Prot								c0.26				
v/s Ratio Perm	0.21	0.36				c0.00						
v/c Ratio	0.52	0.92				0.02		0.62				
Uniform Delay, d1	16.0	20.0				33.6		16.3				
Progression Factor	0.99	0.24				1.00		1.00				
Incremental Delay, d2	1.5	11.6				0.1		1.2				
Delay (s)	17.5	16.4				33.7		17.5				
Level of Service	B	B				C		B				
Approach Delay (s)		16.9			33.7			17.5			0.0	
Approach LOS		B			C			B			A	

Intersection Summary			
HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.7%	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	158	18	33	1505	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			4714				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1269			1631			4714				
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	35	1584	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	1625	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	16%	5%	5%	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			3259				
v/s Ratio Prot					c0.11							
v/s Ratio Perm		0.03						0.34				
v/c Ratio		0.16			0.57			0.50				
Uniform Delay, d1		23.4			25.5			5.1				
Progression Factor		1.07			1.00			0.77				
Incremental Delay, d2		0.3			2.3			0.4				
Delay (s)		25.5			27.8			4.3				
Level of Service		C			C			A				
Approach Delay (s)		25.5			27.8			4.3			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.1	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	51.9%	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

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	52	1570	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		4374				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4374				
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	55	1653	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	19	0	8	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	77	0	1801	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	10%	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		2762				
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		2.10				
Incremental Delay, d2		11.1			0.3	0.3		1.1				
Delay (s)		34.0			20.9	20.8		18.1				
Level of Service		C			C	C		B				
Approach Delay (s)		34.0			20.8			18.1			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	0.69		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.8%	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)	76	31	0	0	71	32	28	1566	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	1800	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	1881	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						0.44				
v/c Ratio		0.54			0.34			0.62				
Uniform Delay, d1		26.5			25.5			5.1				
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	51.0%	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	42	1751	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	45	1863	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	1928	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)		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			0.61				
Incremental Delay, d2		22.1			0.1			1.9				
Delay (s)		37.7			17.9			8.5				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.9			8.5			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	0.80		
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

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1723	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	1958	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	2000	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	9%	6%	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)		8.8			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	51.2%	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	56	37	34	35	0	0	0	0	17	1430	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	1589	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	1646	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						0.39	
v/c Ratio		0.43			0.51						0.51	
Uniform Delay, d1		28.1			28.4						3.4	
Progression Factor		1.00			0.97						0.67	
Incremental Delay, d2		1.6			2.6						0.5	
Delay (s)		29.8			30.2						2.8	
Level of Service		C			C						A	
Approach Delay (s)		29.8			30.2			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	0.51		
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	56	0	0	0	0	8	1289	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			1468						4219	
Flt Permitted		1.00			0.88						1.00	
Satd. Flow (perm)		1451			1305						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	61	0	0	0	0	9	1401	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	87	0	0	0	0	0	1487	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			268						2869	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.07						0.35	
v/c Ratio		0.61			0.32						0.52	
Uniform Delay, d1		25.2			23.7						5.5	
Progression Factor		1.00			1.05						0.24	
Incremental Delay, d2		3.5			0.6						0.6	
Delay (s)		28.7			25.4						1.9	
Level of Service		C			C						A	
Approach Delay (s)		28.7			25.4			0.0			1.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
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			

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	1304	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	1417	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	1463	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						0.46	
Uniform Delay, d1		28.4			28.1						3.1	
Progression Factor		1.00			0.51						0.21	
Incremental Delay, d2		1.9			1.4						0.4	
Delay (s)		30.3			15.8						1.1	
Level of Service		C			B						A	
Approach Delay (s)		30.3			15.8			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	72	0	0	0	0	131	1167	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			1823						4353	
Flt Permitted		1.00			0.84						1.00	
Satd. Flow (perm)		1831			1557						4353	
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	76	0	0	0	0	138	1228	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	136	0	0	0	0	0	1395	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	11%	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			456						2581	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.32	
v/c Ratio		0.22			0.30						0.54	
Uniform Delay, d1		18.7			19.2						8.5	
Progression Factor		1.00			0.96						0.84	
Incremental Delay, d2		0.9			1.6						0.7	
Delay (s)		19.6			20.0						7.9	
Level of Service		B			B						A	
Approach Delay (s)		19.6			20.0			0.0			7.9	
Approach LOS		B			B			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	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	28	151	0	0	0	0	21	465	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)					1320						2350	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1320						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	161	0	0	0	0	22	495	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	121	143
Lane Group Flow (vph)	0	0	0	0	191	0	0	0	0	0	795	272
Heavy Vehicles (%)	2%	4%	10%	64%	5%	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)					15.7						45.3	45.3
Effective Green, g (s)					16.2						45.8	45.8
Actuated g/C Ratio					0.23						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)					305						1538	916
v/s Ratio Prot												
v/s Ratio Perm					0.14						0.34	0.19
v/c Ratio					0.63						0.52	0.30
Uniform Delay, d1					24.2						6.3	5.2
Progression Factor					0.81						0.80	0.13
Incremental Delay, d2					3.9						1.1	0.7
Delay (s)					23.5						6.2	1.4
Level of Service					C						A	A
Approach Delay (s)		0.0			23.5			0.0			4.7	
Approach LOS		A			C			A			A	

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	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	1225	22	0	0	0	0	0	0	19	454	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)		3113									2343	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3113									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	1408	25	0	0	0	0	0	0	22	522	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	1432	0	0	0	0	0	0	0	0	539	0
Heavy Vehicles (%)	5%	4%	10%	2%	2%	2%	2%	6%	16%	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)		1694									800	
v/s Ratio Prot		c0.46										
v/s Ratio Perm											0.23	
v/c Ratio		0.85									0.67	
Uniform Delay, d1		13.5									19.7	
Progression Factor		0.79									1.48	
Incremental Delay, d2		4.5									1.9	
Delay (s)		15.2									31.2	
Level of Service		B									C	
Approach Delay (s)		15.2			0.0			0.0			31.2	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.7%	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)	118	657	0	0	0	0	0	1457	517	0	0	0
Ideal Flow (vphpl)	1900	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	1534	544	0	0	0
RTOR Reduction (vph)	0	13	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	803	0	0	0	0	0	1534	507	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	12%	5%	4%	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							0.46			
v/c Ratio		0.65						0.81	0.74			
Uniform Delay, d1		22.7						10.3	9.4			
Progression Factor		0.88						1.81	1.98			
Incremental Delay, d2		1.2						3.2	5.8			
Delay (s)		21.1						21.9	24.5			
Level of Service		C						C	C			
Approach Delay (s)		21.1			0.0			22.6			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	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	673	411	76	1403	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)					3114			2943				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3114			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	694	424	78	1446	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	1100	0	0	1518	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	12%	5%	4%	4%	4%	5%	10%	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					1.01			0.96				
Uniform Delay, d1					22.8			15.6				
Progression Factor					1.00			0.75				
Incremental Delay, d2					29.5			10.7				
Delay (s)					52.2			22.4				
Level of Service					D			C				
Approach Delay (s)		0.0			52.2			22.4			0.0	
Approach LOS		A			D			C			A	

Intersection Summary			
HCM Average Control Delay	35.0	HCM Level of Service	D
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	1234	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	1327	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	1670	0
Heavy Vehicles (%)	2%	2%	2%	19%	4%	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									0.72	
Incremental Delay, d2		1.3									0.7	
Delay (s)		27.1									4.5	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			4.5	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	8.2	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	444	296	0	0	0	0	0	1268	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)				1104	3077						4415	
Flt Permitted				0.95	0.98						1.00	
Satd. Flow (perm)				1104	3077						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	483	322	0	0	0	0	0	1378	68
RTOR Reduction (vph)	0	0	0	24	24	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	237	520	0	0	0	0	0	1440	0
Heavy Vehicles (%)	2%	2%	2%	19%	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)				319	888						2636	
v/s Ratio Prot				c0.21	0.17						c0.33	
v/s Ratio Perm												
v/c Ratio				0.74	0.59						0.55	
Uniform Delay, d1				22.5	21.3						8.4	
Progression Factor				1.01	1.10						1.00	
Incremental Delay, d2				2.8	0.3						0.8	
Delay (s)				25.7	23.8						9.2	
Level of Service				C	C						A	
Approach Delay (s)		0.0			24.4			0.0			9.2	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.7	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

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1234	36	28	1023	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	3342		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3126		1727	3342		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	1452	42	33	1204	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	1506	0	33	1206	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	8%	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	2314		261	259			90	
v/s Ratio Prot				0.02	c0.36		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.52		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.7		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.55		1.00	1.00			1.00	
Incremental Delay, d2		3.3		2.9	0.7		22.4	19.9			1.7	
Delay (s)		20.4		59.5	5.4		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.4			6.9			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	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1571	102	53	1075	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	3343		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	3343		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	1636	106	55	1120	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	1739	0	55	1120	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	13%	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	1907		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	0.93		0.50	0.59		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.8		53.3	16.4		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	8.4		2.5	1.3		21.0	2.2			2.1	
Delay (s)	42.3	22.6		55.9	17.7		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		22.9			19.5			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.4	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	65.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	919	3	516	859	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		2935	1517		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3260		2935	1517		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1135	4	637	1060	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1139	0	1156	541	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	13%	7%	14%	14%	2%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	36.9		39.6	88.5		39.6
Effective Green, g (s)	38.9		41.6	88.5		41.6
Actuated g/C Ratio	0.44		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)	1433		1380	1517		1248
v/s Ratio Prot	c0.35		c0.39	0.36		0.14
v/s Ratio Perm						
v/c Ratio	0.79		0.84	0.36		0.30
Uniform Delay, d1	21.4		20.5	0.0		14.5
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	3.0		4.5	0.7		0.1
Delay (s)	24.4		25.0	0.7		14.6
Level of Service	C		C	A		B
Approach Delay (s)	24.4		17.3		14.6	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	88.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.7%	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)	177	204	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	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	308	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)	685	1	3	631	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)	737	1	3	678	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			738		1422	737
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			738		1422	737
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)			842		117	349

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	738	682	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	842	135
Volume to Capacity	0.43	0.00	0.08
Queue Length 95th (ft)	0	0	6
Control Delay (s)	0.0	0.1	33.9
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	33.9
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	46.1%	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	678	0	2	656	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	737	0	2	713	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	725			740			1490	1487	742	1481	1481	720
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	725			740			1490	1487	742	1481	1481	720
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)	864			851			97	124	414	99	121	420

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	746	726	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	864	851	124	149
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	34.4	32.5
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	34.4	32.5
Approach LOS			D	D

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
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	681	1	1	651	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	740	1	1	708	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	709			741			1454	1454	741	1454	1454	708
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	709			741			1454	1454	741	1454	1454	708
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)	876			852			108	131	416	108	130	435

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	742	710	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	876	852	171	172
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	26.3	26.1
Lane LOS	A	A	D	D
Approach Delay (s)	0.0	0.0	26.3	26.1
Approach LOS			D	D

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	46.7%	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	596	34	10	596	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	655	37	11	655	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	669			692			1493	1466	676	1465	1478	664
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	669			692			1493	1466	676	1465	1478	664
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
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 %	94			99			93	98	100	81	99	93
cM capacity (veh/h)	905			871			89	120	456	98	117	459

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	743	678	11	54
Volume Left	51	11	7	19
Volume Right	37	12	2	34
cSH	905	871	113	197
Volume to Capacity	0.06	0.01	0.10	0.27
Queue Length 95th (ft)	4	1	8	27
Control Delay (s)	1.4	0.3	40.2	30.1
Lane LOS	A	A	E	D
Approach Delay (s)	1.4	0.3	40.2	30.1
Approach LOS			E	D

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	615	0	0	27	616
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	668	0	0	29	670
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			728	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			728	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)			383	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	668	29	670
Volume Left	0	29	0
Volume Right	668	0	0
cSH	1700	1578	1700
Volume to Capacity	0.39	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	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	628	5	0	16	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)	690	5	0	18	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		1383	1383	1386	0
vC1, stage 1 conf vol			1383	1383	0	
vC2, stage 2 conf vol			0	0	1386	
vCu, unblocked vol	0		1383	1383	1386	0
tC, single (s)	4.3		7.1	6.5	6.5	6.2
tC, 2 stage (s)			6.1	5.5	5.5	
tF (s)	2.4		3.5	4.0	4.0	3.3
p0 queue free %	55		100	82	100	100
cM capacity (veh/h)	1524		86	99	104	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	460	236	18
Volume Left	460	230	0
Volume Right	0	5	0
cSH	1524	1524	99
Volume to Capacity	0.45	0.45	0.18
Queue Length 95th (ft)	61	61	15
Control Delay (s)	9.3	9.2	49.1
Lane LOS	A	A	E
Approach Delay (s)	9.3		49.1
Approach LOS			E

Intersection Summary			
Average Delay	10.2		
Intersection Capacity Utilization	28.1%	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)	21	3	0	0	169	7	12	620	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	705	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	484	755	0	745	743	364	0			727		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	484	755	0	745	743	364	0			727		
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 %	91	99	100	100	44	99	99			100		
cM capacity (veh/h)	256	337	1091	300	341	636	1600			872		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	366	375
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	264	347	1600	1700
Volume to Capacity	0.10	0.58	0.01	0.22
Queue Length 95th (ft)	9	86	1	0
Control Delay (s)	20.2	28.6	0.3	0.0
Lane LOS	C	D	A	
Approach Delay (s)	20.2	28.6	0.2	
Approach LOS	C	D		

Intersection Summary			
Average Delay	6.6		
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)	7	6	0	0	16	2	5	634	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	660	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	351	676	2	679	673	333	0			666		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	351	676	2	679	673	333	0			666		
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 %	99	98	100	100	96	100	100			100		
cM capacity (veh/h)	561	376	1086	336	378	669	1593			920		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	335	335
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	458	397	1593	1700
Volume to Capacity	0.03	0.05	0.00	0.20
Queue Length 95th (ft)	2	4	0	0
Control Delay (s)	13.1	14.5	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.1	14.5	0.1	
Approach LOS	B	B		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	31.5%	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)	10	6	0	0	90	8	19	598	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	22	695	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	456	754	4	752	750	355	3			706		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	456	754	4	752	750	355	3			706		
tC, single (s)	7.9	6.9	7.2	7.6	6.9	7.3	4.3			4.3		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.4	3.6	4.2	3.5	2.3			2.3		
p0 queue free %	96	98	100	100	65	98	99			100		
cM capacity (veh/h)	316	298	1034	281	299	590	1571			828		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	370	355
Volume Left	12	0	22	0
Volume Right	0	9	0	7
cSH	309	312	1571	1700
Volume to Capacity	0.06	0.37	0.01	0.21
Queue Length 95th (ft)	5	41	1	0
Control Delay (s)	17.4	23.0	0.6	0.0
Lane LOS	C	C	A	
Approach Delay (s)	17.4	23.0	0.3	
Approach LOS	C	C		

Intersection Summary				
Average Delay		3.7		
Intersection Capacity Utilization		35.0%	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	22	0	0	0	0	3	461	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	26	0	0	0	0	4	549	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	577	571	282	299	575	7	561			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	288	281	0	0	286	7	270			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	4.1	3.4	2.2			2.3		
p0 queue free %	100	97	100	89	95	100	100			100		
cM capacity (veh/h)	519	528	930	870	542	1055	1150			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	126	278	284
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	578	773	1541	1700
Volume to Capacity	0.03	0.16	0.00	0.17
Queue Length 95th (ft)	2	15	0	0
Control Delay (s)	11.4	10.6	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.4	10.6	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.2		
Intersection Capacity Utilization		34.2%	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	522	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	561	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	598	590	289	314	597	4	574			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	598	590	289	314	597	4	574			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)	378	419	714	600	416	1080	995			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	291	294
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	446	509	1576	1700
Volume to Capacity	0.03	0.06	0.01	0.17
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.4	12.5	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.4	12.5	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		33.7%	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	477	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	507	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	577			0			591	570	290	300	604	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	577			0			591	570	290	300	604	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)	993			1565			360	430	712	591	409	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	268	323	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	436	531
Volume to Capacity	0.01	0.19	0.08	0.32
Queue Length 95th (ft)	1	0	6	35
Control Delay (s)	0.5	0.0	13.9	15.0
Lane LOS	A		B	B
Approach Delay (s)	0.2		13.9	15.0
Approach LOS			B	B

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	37.8%	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	0	0	0	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	0	0	0	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	49			29			70	78	49	70	70	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	49			29			70	78	49	70	70	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)	1571			1584			922	658	1020	908	810	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	49	0	5
Volume Left	0	0	0	5
Volume Right	17	0	0	0
cSH	1571	1584	1700	908
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	0.0	9.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	9.0
Approach LOS			A	A

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	13.3%	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	44	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	48	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	61	48	49			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	48	49			
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)	944	1020	1571			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	49
Volume Left	1	1	0
Volume Right	1	0	1
cSH	981	1571	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		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	521	4	4	565	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	599	5	5	649	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	649			603			1386	1338	601	1347	1344	653
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	649			603			1386	1338	601	1347	1344	653
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			81	98	99	95	100	89
cM capacity (veh/h)	895			984			99	140	484	115	138	452

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	603	5	656	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	895	1700	984	1700	124	344
Volume to Capacity	0.04	0.35	0.00	0.39	0.22	0.16
Queue Length 95th (ft)	3	0	0	0	20	14
Control Delay (s)	9.2	0.0	8.7	0.0	42.1	17.4
Lane LOS	A		A		E	C
Approach Delay (s)	0.6		0.1		42.1	17.4
Approach LOS					E	C

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	460	10	15	516	98	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	500	11	16	561	107	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	667			511			1222	1242	505	1238	1195	614
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	667			511			1222	1242	505	1238	1195	614
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	90	92	56	96	94
cM capacity (veh/h)	886			1015			131	159	544	128	180	494

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	529	684	65	92
Volume Left	18	16	9	57
Volume Right	11	107	41	29
cSH	886	1015	274	172
Volume to Capacity	0.02	0.02	0.24	0.54
Queue Length 95th (ft)	2	1	23	69
Control Delay (s)	0.6	0.4	22.2	48.1
Lane LOS	A	A	C	E
Approach Delay (s)	0.6	0.4	22.2	48.1
Approach LOS			C	E

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
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	416	2	4	0	409	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	467	2	4	0	460	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	460			470			500	960	469	549	501	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460			470			500	960	469	549	501	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	86	95	100	100	100
cM capacity (veh/h)	1076			495			474	252	595	370	463	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	470	4	460	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	460	33
cSH	1076	1700	495	1700	347
Volume to Capacity	0.01	0.28	0.01	0.27	0.20
Queue Length 95th (ft)	1	0	1	0	18
Control Delay (s)	8.4	0.0	12.3	0.0	17.9
Lane LOS	A		B		C
Approach Delay (s)	0.2		0.1		17.9
Approach LOS					C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

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

8/12/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	240	0	37	0	0	0	31	228	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)	282	0	44	0	0	0	36	268	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			44		605	608	0	873	586	22
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			44		605	608	0	873	586	22
tC, single (s)	4.7			4.1		7.6	6.5	6.9	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.8			2.2		4.0	4.0	3.9	3.5	4.0	3.3
p0 queue free %	78			100		100	89	71	98	89	100
cM capacity (veh/h)	1305			1565		265	318	924	148	333	1061

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	326	0	305	40
Volume Left	282	0	0	2
Volume Right	44	0	268	0
cSH	1305	1700	753	310
Volume to Capacity	0.22	0.00	0.40	0.13
Queue Length 95th (ft)	21	0	49	11
Control Delay (s)	7.6	0.0	13.0	18.3
Lane LOS	A		B	C
Approach Delay (s)	7.6	0.0	13.0	18.3
Approach LOS			B	C

Intersection Summary			
Average Delay	10.7		
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	110	120	0	99	178	174
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	120	130	0	108	193	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			250		292	185
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			250		292	185
tC, single (s)			4.1		6.9	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.0	3.3
p0 queue free %			100		68	78
cM capacity (veh/h)			1327		607	863

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	250	108	383
Volume Left	0	0	193
Volume Right	130	0	189
cSH	1700	1327	711
Volume to Capacity	0.15	0.00	0.54
Queue Length 95th (ft)	0	0	81
Control Delay (s)	0.0	0.0	15.8
Lane LOS			C
Approach Delay (s)	0.0	0.0	15.8
Approach LOS			C

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	0	58	0	0	58	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	63	0	0	63	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			63		32	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			63		32	32
tC, single (s)			4.1		7.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.4	3.3
p0 queue free %			100		92	100
cM capacity (veh/h)			1540		782	1042

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	63	0	63
Volume Left	0	0	63
Volume Right	63	0	0
cSH	1700	1700	782
Volume to Capacity	0.04	0.00	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.0	10.0
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.0
Approach LOS			B

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	13.6%	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)	11	460	4	15	559	31	33	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			0.96	1.00		0.97	
Satd. Flow (prot)		1560			1653			1780	1538		1747	
Flt Permitted		0.99			0.99			0.73	1.00		0.79	
Satd. Flow (perm)		1540			1633			1348	1538		1420	
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	495	4	16	601	33	35	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	511	0	0	649	0	0	43	4	0	44	0
Heavy Vehicles (%)	7%	22%	7%	2%	15%	2%	2%	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)		28.8			28.8			5.9	5.9		5.9	
Effective Green, g (s)		29.3			29.3			6.4	6.4		6.4	
Actuated g/C Ratio		0.67			0.67			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)		1033			1095			197	225		208	
v/s Ratio Prot												
v/s Ratio Perm		0.33			c0.40			c0.03	0.00		0.03	
v/c Ratio		0.49			0.59			0.22	0.02		0.21	
Uniform Delay, d1		3.5			3.9			16.4	16.0		16.4	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.4			0.9			0.6	0.0		0.5	
Delay (s)		3.9			4.8			17.0	16.0		16.9	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.9			4.8			16.6			16.9	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	43.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	130	266	19	131
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	148	302	22	149
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		801	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					598	
vCu, unblocked vol			220		801	203
tC, single (s)			5.1		6.5	7.2
tC, 2 stage (s)					5.5	
tF (s)			3.1		3.6	4.2
p0 queue free %			84		95	77
cM capacity (veh/h)			942		423	647

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	148	302	170
Volume Left	0	0	148	0	22
Volume Right	0	17	0	0	149
cSH	1700	1700	942	1700	607
Volume to Capacity	0.12	0.01	0.16	0.18	0.28
Queue Length 95th (ft)	0	0	14	0	29
Control Delay (s)	0.0	0.0	9.5	0.0	13.2
Lane LOS			A		B
Approach Delay (s)	0.0		3.1		13.2
Approach LOS					B

Intersection Summary			
Average Delay	4.4		
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 (vph)	119	1323	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)		3345						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3345						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	1423	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	1563	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)		2623						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.47									c0.03	
v/c Ratio		0.60						0.19			0.33	
Uniform Delay, d1		3.1						28.8			29.3	
Progression Factor		1.00						1.00			0.60	
Incremental Delay, d2		1.0						0.3			0.6	
Delay (s)		4.1						29.1			18.1	
Level of Service		A						C			B	
Approach Delay (s)		4.1			0.0			29.1			18.1	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.1	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	54.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1335	71	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			0.65	
Satd. Flow (perm)		3335						1711			1086	
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	1571	84	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	16	0	0	0	0
Lane Group Flow (vph)	0	1669	0	0	0	0	0	220	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)		37.6						15.3			15.3	
Effective Green, g (s)		37.6						15.3			15.3	
Actuated g/C Ratio		0.62						0.25			0.25	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		2059						430			273	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.50									c0.17	
v/c Ratio		0.81						0.51			0.68	
Uniform Delay, d1		8.9						19.6			20.6	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.5						1.0			6.9	
Delay (s)		11.4						20.6			27.6	
Level of Service		B						C			C	
Approach Delay (s)		11.4			0.0			20.6			27.6	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1329	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)		3353						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3353						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	1370	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	1411	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)		34.7						4.5			4.5	
Effective Green, g (s)		35.2						5.0			5.0	
Actuated g/C Ratio		0.73						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)		2449						166			141	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.42									c0.04	
v/c Ratio		0.58						0.17			0.39	
Uniform Delay, d1		3.0						19.7			20.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.3						0.5			1.8	
Delay (s)		3.4						20.2			22.0	
Level of Service		A						C			C	
Approach Delay (s)		3.4			0.0			20.2			22.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	48.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.1%	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)	52	1353	26	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)	54	1395	27	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			1422			1539	1515	711	858	1529	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1422			1539	1515	711	858	1529	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	72	90	74	59	100
cM capacity (veh/h)	1607			475			52	113	373	175	114	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	751	724	69	92
Volume Left	54	0	0	45
Volume Right	0	27	37	0
cSH	1607	1700	181	138
Volume to Capacity	0.03	0.43	0.38	0.67
Queue Length 95th (ft)	3	0	41	91
Control Delay (s)	0.9	0.0	36.6	71.9
Lane LOS	A		E	F
Approach Delay (s)	0.5		36.6	71.9
Approach LOS			E	F

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	1033	12	0	0	0	0	485	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	3356						3032				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3356						3032				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	1123	13	0	0	0	0	527	9	0	0	0
RTOR Reduction (vph)	51	1	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	57	1135	0	0	0	0	0	535	0	0	0	0
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	4%	19%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	25.2	25.2						14.5				
Effective Green, g (s)	26.2	26.2						15.5				
Actuated g/C Ratio	0.53	0.53						0.31				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	924	1769						946				
v/s Ratio Prot		c0.34						c0.18				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.64						0.57				
Uniform Delay, d1	5.7	8.4						14.3				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.8						0.8				
Delay (s)	5.8	9.2						15.1				
Level of Service	A	A						B				
Approach Delay (s)		8.9			0.0			15.1			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	49.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.4%	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	1204	70	0	0	0	0	27	345	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					0.87	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2764	1300					1555	1519		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.67	
Satd. Flow (perm)		2764	1300					1555	1519		1248	
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	1295	75	0	0	0	0	29	371	44	34	0
RTOR Reduction (vph)	0	0	10	0	0	0	0	30	30	0	0	0
Lane Group Flow (vph)	0	1313	65	0	0	0	0	173	167	0	78	0
Heavy Vehicles (%)	6%	11%	6%	2%	2%	2%	2%	2%	1%	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)		47.9	47.9					13.1	13.1		13.1	
Effective Green, g (s)		48.4	48.4					13.6	13.6		13.6	
Actuated g/C Ratio		0.69	0.69					0.19	0.19		0.19	
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)		1911	899					302	295		242	
v/s Ratio Prot		c0.47						c0.11				
v/s Ratio Perm			0.05						0.11		0.06	
v/c Ratio		0.69	0.07					0.57	0.57		0.32	
Uniform Delay, d1		6.3	3.5					25.6	25.5		24.2	
Progression Factor		0.39	0.38					1.00	1.00		1.00	
Incremental Delay, d2		1.7	0.1					2.6	2.5		0.8	
Delay (s)		4.2	1.5					28.2	28.0		25.0	
Level of Service		A	A					C	C		C	
Approach Delay (s)		4.1			0.0			28.1			25.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	10.1	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	63.0%	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)	23	1175	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)		2759						1314			1462	
Flt Permitted		1.00						1.00			0.88	
Satd. Flow (perm)		2759						1314			1306	
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	1237	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	38	0	0	0	0
Lane Group Flow (vph)	0	1285	0	0	0	0	0	66	0	0	18	0
Heavy Vehicles (%)	6%	11%	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)		54.0						8.0			8.0	
Effective Green, g (s)		54.0						8.0			8.0	
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)		2128						150			149	
v/s Ratio Prot								c0.05				
v/s Ratio Perm		0.47									0.01	
v/c Ratio		0.60						0.44			0.12	
Uniform Delay, d1		3.4						28.9			27.8	
Progression Factor		0.45						1.00			1.00	
Incremental Delay, d2		0.7						2.1			0.4	
Delay (s)		2.2						31.0			28.2	
Level of Service		A						C			C	
Approach Delay (s)		2.2			0.0			31.0			28.2	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.7	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	47.3%	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	1034	16	0	0	0	0	0	29	289	204	0
Ideal Flow (vphpl)	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)		2736							1289	1681	1403	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2736							1289	1681	1403	
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	1088	17	0	0	0	0	0	31	304	215	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	170	12	0
Lane Group Flow (vph)	0	1103	0	0	0	0	0	0	4	85	252	0
Heavy Vehicles (%)	6%	12%	6%	2%	2%	2%	2%	1%	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)		29.5							9.5	17.5	17.5	
Effective Green, g (s)		30.0							10.0	18.0	18.0	
Actuated g/C Ratio		0.43							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)		1173							184	432	361	
v/s Ratio Prot		c0.40							c0.00	0.05	c0.18	
v/s Ratio Perm												
v/c Ratio		0.94							0.02	0.20	0.70	
Uniform Delay, d1		19.1							25.8	20.3	23.5	
Progression Factor		1.13							1.00	1.00	1.00	
Incremental Delay, d2		14.1							0.2	1.0	10.7	
Delay (s)		35.7							26.0	21.4	34.2	
Level of Service		D							C	C	C	
Approach Delay (s)		35.7			0.0			26.0			27.9	
Approach LOS		D			A			C			C	

Intersection Summary			
HCM Average Control Delay	33.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	511	12	0	0	0	0	68	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						0.96		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2578						1446		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2578						1446		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	544	13	0	0	0	0	72	27	489	50	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	0	562	0	0	0	0	0	79	0	269	270	0
Heavy Vehicles (%)	6%	19%	6%	2%	2%	2%	2%	1%	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)		24.0						7.6		24.9	24.9	
Effective Green, g (s)		24.5						8.1		25.4	25.4	
Actuated g/C Ratio		0.35						0.12		0.36	0.36	
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)		902						167		610	493	
v/s Ratio Prot								c0.05		0.16	c0.20	
v/s Ratio Perm		0.22										
v/c Ratio		0.62						0.47		0.44	0.55	
Uniform Delay, d1		18.9						28.9		16.9	17.7	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.3						2.1		2.3	4.3	
Delay (s)		20.3						31.1		19.2	22.1	
Level of Service		C						C		B	C	
Approach Delay (s)		20.3			0.0			31.1			20.6	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.0%	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	437	0	626	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)		1552		1906		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1552		1906		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	486	0	696	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	486	0	696	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	20%	2%	13%	3%	3%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		33.2		33.2		
Effective Green, g (s)		33.2		33.2		
Actuated g/C Ratio		0.77		0.77		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1193		1465		
v/s Ratio Prot		0.31		c0.37		
v/s Ratio Perm						
v/c Ratio		0.41		0.48		
Uniform Delay, d1		1.7		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.2		0.2		
Delay (s)		1.9		2.1		
Level of Service		A		A		
Approach Delay (s)	1.9			2.1	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	2.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	43.2	Sum of lost time (s)	10.0
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	0	0	13	882	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	919	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	82	0
Lane Group Flow (vph)	0	0	0	0	955	0	0	189	0	0	265	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)					49.2			11.8			11.8	
Effective Green, g (s)					49.7			12.3			12.3	
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)					2478			534			526	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.27			0.06				
v/c Ratio					0.39			0.35			0.50	
Uniform Delay, d1					4.1			25.4			26.1	
Progression Factor					1.49			1.03			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					6.4			26.5			26.9	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.4			26.5			26.9	
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	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)	0	0	0	14	1184	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	1260	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	52
Lane Group Flow (vph)	0	0	0	0	1293	0	0	419	0	0	54	238
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	0.54
Uniform Delay, d1					8.5			24.8			19.2	21.8
Progression Factor					0.59			1.00			1.00	1.00
Incremental Delay, d2					1.4			26.1			0.5	4.8
Delay (s)					6.4			50.8			19.7	26.6
Level of Service					A			D			B	C
Approach Delay (s)		0.0			6.4			50.8			25.5	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	18.6	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	81.4%	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)	0	0	0	44	1120	92	32	80	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		0.99			1.00	
Satd. Flow (prot)					3567	1554		1818			1794	
Flt Permitted					1.00	1.00		0.85			1.00	
Satd. Flow (perm)					3567	1554		1575			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	84	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	118	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)					28.9	28.9		14.7			14.7	
Effective Green, g (s)					28.9	28.9		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)					1998	870		449			511	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.34	0.03		0.07				
v/c Ratio					0.61	0.06		0.26			0.59	
Uniform Delay, d1					7.6	5.2		14.3			15.8	
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		14.6			17.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.0			14.6			17.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	51.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	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	18	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	20	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	1396	1386	650
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1300			0			758	1392	0	1396	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	86	100	100	86	97
cM capacity (veh/h)	529			1622			251	138	1084	89	140	417

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	690	657	77	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	207	188
Volume to Capacity	0.03	0.39	0.37	0.17
Queue Length 95th (ft)	2	0	40	15
Control Delay (s)	0.8	0.0	32.3	28.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		32.3	28.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1159	2	546	18	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		1441	1458				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1441	1458				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	613	20	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	154	154	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1304	0	165	160	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	19%	7%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					27.8		11.7	11.7				0.7
Effective Green, g (s)					28.8		12.7	12.7				1.7
Actuated g/C Ratio					0.52		0.23	0.23				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)					1754		332	335				50
v/s Ratio Prot					c0.39							
v/s Ratio Perm							c0.11	0.11				c0.00
v/c Ratio					0.74		0.50	0.48				0.00
Uniform Delay, d1					10.3		18.5	18.4				25.9
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.7		1.2	1.1				0.0
Delay (s)					12.1		19.6	19.5				26.0
Level of Service					B		B	B				C
Approach Delay (s)		0.0			12.1			19.6			26.0	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	55.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.4%	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	1304	177	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	1373	186	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	1373				1373	686
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1373				1373	686
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)	496				134	385

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	686	686	186	89
Volume Left	0	0	0	0
Volume Right	0	0	186	89
cSH	1700	1700	1700	385
Volume to Capacity	0.40	0.40	0.11	0.23
Queue Length 95th (ft)	0	0	0	22
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	0.9		
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	462	1159	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)	476	1195	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			476	476	476	1671	1671	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			476	476	476	1671	1671	
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)			488	589	499	96	384	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	875	797	8	101
Volume Left	0	0	8	0
Volume Right	398	797	0	0
cSH	1700	1700	499	96
Volume to Capacity	0.51	0.47	0.02	1.05
Queue Length 95th (ft)	0	0	1	162
Control Delay (s)	0.0	0.0	12.3	188.7
Lane LOS			B	F
Approach Delay (s)	0.0		175.4	
Approach LOS			F	

Intersection Summary			
Average Delay	10.8		
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	75	0	0	1279	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)	1787			3343		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1787			3343		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	0	0	1390	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	82	0	0	1390	0	508
Heavy Vehicles (%)	1%	2%	12%	8%	3%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	15.9			52.2		77.1
Effective Green, g (s)	16.4			52.7		77.1
Actuated g/C Ratio	0.21			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	380			2285		2787
v/s Ratio Prot	c0.05			c0.42		
v/s Ratio Perm						c0.18
v/c Ratio	0.22			0.61		0.18
Uniform Delay, d1	25.0			6.6		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			1.1		0.1
Delay (s)	25.1			7.7		0.1
Level of Service	C			A		A
Approach Delay (s)	25.1			7.7	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	4.0
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	718	584	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)			1558	1845	3467	
Flt Permitted			0.37	1.00	1.00	
Satd. Flow (perm)			603	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	748	608	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	748	608	518	0
Heavy Vehicles (%)	2%	2%	12%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			57.2	61.7	25.8	
Effective Green, g (s)			58.2	62.2	26.3	
Actuated g/C Ratio			0.75	0.81	0.34	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			850	1488	1183	
v/s Ratio Prot			c0.36	0.33	0.15	
v/s Ratio Perm			c0.30			
v/c Ratio			0.88	0.41	0.44	
Uniform Delay, d1			8.6	2.1	19.7	
Progression Factor			0.73	0.10	1.00	
Incremental Delay, d2			8.7	0.6	0.1	
Delay (s)			14.9	0.9	19.8	
Level of Service			B	A	B	
Approach Delay (s)	0.0			8.6	19.8	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	18.9
Intersection Capacity Utilization	60.5%	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)	1051	230	0	0	0	21	0	339	301	0	0	0
Ideal Flow (vphpl)	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		0.93				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1633	1671				1277		2171				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1633	1671				1277		2171				
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)	1130	247	0	0	0	23	0	365	324	0	0	0
RTOR Reduction (vph)	316	81	0	0	0	23	0	187	0	0	0	0
Lane Group Flow (vph)	362	618	0	0	0	0	0	502	0	0	0	0
Heavy Vehicles (%)	5%	4%	2%	0%	16%	3%	5%	14%	51%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	32.0	32.0				2.0		24.0				
Effective Green, g (s)	32.5	32.5				1.0		24.5				
Actuated g/C Ratio	0.46	0.46				0.01		0.35				
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)	758	776				18		760				
v/s Ratio Prot								c0.23				
v/s Ratio Perm	0.22	0.37				c0.00						
v/c Ratio	0.48	0.80				0.02		0.66				
Uniform Delay, d1	12.9	15.9				34.0		19.2				
Progression Factor	0.81	0.11				1.00		1.00				
Incremental Delay, d2	1.0	4.0				0.1		2.2				
Delay (s)	11.5	5.8				34.2		21.4				
Level of Service	B	A				C		C				
Approach Delay (s)		8.6			34.2			21.4			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.9%	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	328	18	33	1385	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)		1255			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	345	19	35	1458	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	361	0	0	1499	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	45%	5%	5%	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)		24.1			24.1			36.9				
Effective Green, g (s)		24.6			24.6			37.4				
Actuated g/C Ratio		0.35			0.35			0.53				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		441			464			2611				
v/s Ratio Prot					c0.27							
v/s Ratio Perm		0.03						0.31				
v/c Ratio		0.09			0.78			0.57				
Uniform Delay, d1		15.2			20.3			10.9				
Progression Factor		0.69			1.00			0.71				
Incremental Delay, d2		0.1			8.0			0.7				
Delay (s)		10.5			28.3			8.5				
Level of Service		B			C			A				
Approach Delay (s)		10.5			28.3			8.5			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	12.3	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	52.6%	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

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	144	0	0	82	114	52	1450	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		4521				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4521				
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	55	1526	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	25	0	9	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	71	0	1673	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	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		0.37				
v/c Ratio		0.78			0.22	0.18		0.59				
Uniform Delay, d1		24.3			20.6	20.4		7.5				
Progression Factor		0.96			1.00	1.00		1.87				
Incremental Delay, d2		11.3			0.3	0.2		0.8				
Delay (s)		34.7			20.9	20.7		14.9				
Level of Service		C			C	C		B				
Approach Delay (s)		34.7			20.8			14.9			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	17.7	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	58.5%	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	1446	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			4380				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4380				
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	1662	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	20	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	99	0	0	1743	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			0.32			0.56				
Uniform Delay, d1		26.5			25.4			4.7				
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	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	48.7%	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)	233	25	0	0	32	18	42	1631	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			4391				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			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)	248	27	0	0	34	19	45	1735	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	1800	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)		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			10.1				
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	11.4	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	60.4%	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)	53	15	0	0	7	10	22	1603	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	1822	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	1864	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	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)		8.8			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						0.42				
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	48.8%	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

8/12/2009

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	1310	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	1456	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	1513	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			29.3						2.6	
Level of Service		C			C						A	
Approach Delay (s)		29.2			29.3			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	43.5%	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	145	35	24	56	0	0	0	0	8	1169	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			1468						4403	
Flt Permitted		1.00			0.88						1.00	
Satd. Flow (perm)		1451			1305						4403	
Peak-hour factor, PHF	0.92	0.92	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	61	0	0	0	0	9	1271	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	87	0	0	0	0	0	1357	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			268						2994	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.07						0.31	
v/c Ratio		0.61			0.32						0.45	
Uniform Delay, d1		25.2			23.7						5.2	
Progression Factor		1.00			1.03						0.26	
Incremental Delay, d2		3.5			0.7						0.5	
Delay (s)		28.7			25.0						1.8	
Level of Service		C			C						A	
Approach Delay (s)		28.7			25.0			0.0			1.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.2	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	48.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1184	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	1287	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	1333	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			0.56						0.24	
Incremental Delay, d2		1.9			1.4						0.3	
Delay (s)		30.3			17.1						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.3			17.1			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	40.4%	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	104	15	57	72	0	0	0	0	131	1047	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			1823						4568	
Flt Permitted		1.00			0.84						0.99	
Satd. Flow (perm)		1831			1557						4568	
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	76	0	0	0	0	138	1102	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	136	0	0	0	0	0	1269	0
Heavy Vehicles (%)	2%	2%	2%	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)		536			456						2708	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.28	
v/c Ratio		0.22			0.30						0.47	
Uniform Delay, d1		18.7			19.2						8.0	
Progression Factor		1.00			0.95						0.86	
Incremental Delay, d2		0.9			1.6						0.6	
Delay (s)		19.6			19.8						7.4	
Level of Service		B			B						A	
Approach Delay (s)		19.6			19.8			0.0			7.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.5	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	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	198	151	0	0	0	0	21	345	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)					961						2486	1400
Flt Permitted					0.97						1.00	1.00
Satd. Flow (perm)					961						2486	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	211	161	0	0	0	0	22	367	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	219	219
Lane Group Flow (vph)	0	0	0	0	372	0	0	0	0	0	577	188
Heavy Vehicles (%)	2%	10%	10%	91%	5%	2%	2%	2%	2%	0%	14%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					29.1						31.9	31.9
Effective Green, g (s)					29.6						32.4	32.4
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)					406						1151	648
v/s Ratio Prot												
v/s Ratio Perm					0.39						0.23	0.13
v/c Ratio					0.92						0.50	0.29
Uniform Delay, d1					19.0						13.2	11.7
Progression Factor					1.02						0.20	0.21
Incremental Delay, d2					21.2						1.4	1.0
Delay (s)					40.6						4.1	3.5
Level of Service					D						A	A
Approach Delay (s)		0.0			40.6			0.0			3.9	
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	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1225	22	0	0	0	0	0	0	19	504	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)		3113									2274	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3113									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	1408	25	0	0	0	0	0	0	22	579	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	1432	0	0	0	0	0	0	0	0	597	0
Heavy Vehicles (%)	5%	4%	10%	2%	2%	2%	2%	6%	21%	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)		1628									825	
v/s Ratio Prot		c0.46										
v/s Ratio Perm											0.26	
v/c Ratio		0.88									0.72	
Uniform Delay, d1		14.7									19.3	
Progression Factor		0.81									1.29	
Incremental Delay, d2		6.0									2.4	
Delay (s)		18.0									27.2	
Level of Service		B									C	
Approach Delay (s)		18.0			0.0			0.0			27.2	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	20.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.9%	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)	118	657	0	0	0	0	0	1457	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	1534	418	0	0	0
RTOR Reduction (vph)	0	13	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	803	0	0	0	0	0	1534	381	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	16%	5%	4%	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						1.88	2.16			
Incremental Delay, d2		1.2						3.4	2.0			
Delay (s)		21.3						22.7	18.0			
Level of Service		C						C	B			
Approach Delay (s)		21.3			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	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	553	411	76	1403	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	1446	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	1519	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	5%	12%	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			15.0				
Progression Factor					1.00			0.76				
Incremental Delay, d2					8.1			8.8				
Delay (s)					29.7			20.2				
Level of Service					C			C				
Approach Delay (s)		0.0			29.7			20.2			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	24.0	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	76.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1114	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									4392	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4392	
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	1198	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	1535	0
Heavy Vehicles (%)	2%	2%	2%	24%	4%	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)		12.7									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									3062	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.35	
v/c Ratio		0.56									0.50	
Uniform Delay, d1		25.8									4.9	
Progression Factor		1.00									0.65	
Incremental Delay, d2		1.3									0.5	
Delay (s)		27.1									3.7	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			3.7	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.4%	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	324	296	0	0	0	0	0	1268	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	1378	68
RTOR Reduction (vph)	0	0	0	26	26	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	192	430	0	0	0	0	0	1440	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	1.26						1.00	
Incremental Delay, d2				1.9	0.3						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	76.1%	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	1234	36	28	1023	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	3342		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3126		1727	3342		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	1452	42	33	1204	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	1506	0	33	1206	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	8%	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	2314		261	259			90	
v/s Ratio Prot				0.02	c0.36		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.52		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.7		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.55		1.00	1.00			1.00	
Incremental Delay, d2		3.3		2.9	0.7		22.4	19.9			1.7	
Delay (s)		20.4		59.5	5.4		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.4			6.9			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	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1571	102	53	1075	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	3343		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	3343		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	1636	106	55	1120	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	1739	0	55	1120	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	16%	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	1907		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	0.93		0.50	0.59		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.8		53.3	16.4		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	8.4		2.5	1.3		21.0	2.2			2.1	
Delay (s)	42.3	22.6		55.9	17.7		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		22.9			19.5			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.4	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	65.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	969	3	516	909	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		2878	1491		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3176		2878	1491		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1196	4	637	1122	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1200	0	1198	561	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	16%	7%	16%	16%	2%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	39.7		41.8	93.5		41.8
Effective Green, g (s)	41.7		43.8	93.5		43.8
Actuated g/C Ratio	0.45		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)	1416		1348	1491		1244
v/s Ratio Prot	c0.38		c0.42	0.38		0.14
v/s Ratio Perm						
v/c Ratio	0.85		0.89	0.38		0.30
Uniform Delay, d1	23.1		22.6	0.0		15.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	4.8		7.5	0.7		0.1
Delay (s)	27.9		30.1	0.7		15.5
Level of Service	C		C	A		B
Approach Delay (s)	27.9		20.7		15.5	
Approach LOS	C		C		B	

Intersection Summary			
HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	93.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.7%	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	805	1	3	510	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	847	1	3	537	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	1475	1468	573	1454	1496	850	601			849		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1475	1468	573	1454	1496	850	601			849		
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	96	100	100	98	98			100		
cM capacity (veh/h)	99	124	519	102	119	363	975			788		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	855	3	595
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	519	363	975	975	788	1700
Volume to Capacity	0.04	0.02	0.02	0.02	0.00	0.35
Queue Length 95th (ft)	3	2	2	2	0	0
Control Delay (s)	12.2	15.2	8.8	0.4	9.6	0.0
Lane LOS	B	C	A	A	A	
Approach Delay (s)	12.2	15.2	0.6		0.1	
Approach LOS	B	C				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	47.6%	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	760	2	2	462	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	817	2	2	497	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	1369	1366	512	1361	1381	818	528			819		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1369	1366	512	1361	1381	818	528			819		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	78	99	98	100	98	99	99			100		
cM capacity (veh/h)	120	145	564	121	142	377	1044			809		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	819	2	528
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	156	243	1044	1700	809	1700
Volume to Capacity	0.24	0.03	0.01	0.48	0.00	0.31
Queue Length 95th (ft)	23	2	1	0	0	0
Control Delay (s)	35.3	20.2	8.5	0.0	9.5	0.0
Lane LOS	E	C	A		A	
Approach Delay (s)	35.3	20.2	0.2		0.0	
Approach LOS	E	C				

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
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	563	2	2	222	334
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	647	2	2	255	384
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1111	1106	447	916	1297	648	639			649		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1111	1106	447	916	1297	648	639			649		
tC, single (s)	7.1	6.6	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)	180	207	616	242	155	455	955			946		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	649	2	639
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	384
cSH	199	219	955	1700	946	1700
Volume to Capacity	0.13	0.05	0.00	0.38	0.00	0.38
Queue Length 95th (ft)	11	4	0	0	0	0
Control Delay (s)	25.7	22.3	8.8	0.0	8.8	0.0
Lane LOS	D	C	A		A	
Approach Delay (s)	25.7	22.3	0.0		0.0	
Approach LOS	D	C				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	540	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	568	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			600			718	584	584	628	600	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			600			718	584	584	628	600	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	42	99
cM capacity (veh/h)	1604			987			185	425	513	333	415	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	600	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	419	429
Volume to Capacity	0.00	0.00	0.21	0.60
Queue Length 95th (ft)	0	0	20	94
Control Delay (s)	0.0	0.0	15.9	25.0
Lane LOS			C	D
Approach Delay (s)	0.0	0.0	15.9	25.0
Approach LOS			C	D

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	735	1	3	681	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)	790	1	3	732	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			791		1530	791
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			791		1530	791
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		91	99
cM capacity (veh/h)			803		100	323

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	791	735	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	803	116
Volume to Capacity	0.47	0.00	0.09
Queue Length 95th (ft)	0	0	8
Control Delay (s)	0.0	0.1	39.2
Lane LOS		A	E
Approach Delay (s)	0.0	0.1	39.2
Approach LOS			E

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	48.7%	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	728	0	2	706	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	791	0	2	767	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	779			794			1599	1595	796	1589	1590	775
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	779			794			1599	1595	796	1589	1590	775
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	90	98	98
cM capacity (veh/h)	824			812			81	106	385	83	104	391

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	800	780	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	824	812	106	127
Volume to Capacity	0.01	0.00	0.01	0.15
Queue Length 95th (ft)	1	0	1	12
Control Delay (s)	0.3	0.1	39.3	38.0
Lane LOS	A	A	E	E
Approach Delay (s)	0.3	0.1	39.3	38.0
Approach LOS			E	E

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	731	1	1	701	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	795	1	1	762	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	763			796			1563	1562	795	1563	1562	762
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	763			796			1563	1562	795	1563	1562	762
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)	836			813			90	113	387	90	111	405

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	797	764	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	836	813	146	148
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	30.0	29.8
Lane LOS	A	A	D	D
Approach Delay (s)	0.0	0.0	30.0	29.8
Approach LOS			D	D

Intersection Summary			
Average Delay	0.1		
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)	46	646	34	10	646	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	710	37	11	710	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	724			747			1603	1576	731	1575	1588	719
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	724			747			1603	1576	731	1575	1588	719
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
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 %	94			99			91	98	99	77	99	92
cM capacity (veh/h)	863			830			74	103	424	82	100	427

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	798	733	11	54
Volume Left	51	11	7	19
Volume Right	37	12	2	34
cSH	863	830	95	169
Volume to Capacity	0.06	0.01	0.12	0.32
Queue Length 95th (ft)	5	1	9	32
Control Delay (s)	1.5	0.4	47.8	36.0
Lane LOS	A	A	E	E
Approach Delay (s)	1.5	0.4	47.8	36.0
Approach LOS			E	E

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	665	0	0	27	666
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	723	0	0	29	724
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			783	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			783	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)			356	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	723	29	724
Volume Left	0	29	0
Volume Right	723	0	0
cSH	1700	1578	1700
Volume to Capacity	0.43	0.02	0.43
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	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	678	5	0	16	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)	745	5	0	18	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		1493	1493	1496	0
vC1, stage 1 conf vol			1493	1493	0	
vC2, stage 2 conf vol			0	0	1496	
vCu, unblocked vol	0		1493	1493	1496	0
tC, single (s)	4.3		7.2	6.5	6.5	6.2
tC, 2 stage (s)			6.1	5.5	5.5	
tF (s)	2.4		3.5	4.0	4.0	3.3
p0 queue free %	50		100	78	100	100
cM capacity (veh/h)	1501		69	79	84	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	497	254	18
Volume Left	497	248	0
Volume Right	0	5	0
cSH	1501	1501	79
Volume to Capacity	0.50	0.50	0.22
Queue Length 95th (ft)	72	72	19
Control Delay (s)	9.7	9.6	63.1
Lane LOS	A	A	F
Approach Delay (s)	9.7		63.1
Approach LOS			F

Intersection Summary			
Average Delay	10.9		
Intersection Capacity Utilization	29.5%	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)	21	3	0	0	169	7	12	670	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	761	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	512	811	0	802	800	392	0			784		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	512	811	0	802	800	392	0			784		
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 %	89	99	100	100	39	99	99			100		
cM capacity (veh/h)	227	313	1091	273	316	610	1600			830		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	394	403
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	235	322	1600	1700
Volume to Capacity	0.12	0.62	0.01	0.24
Queue Length 95th (ft)	10	98	1	0
Control Delay (s)	22.3	32.9	0.3	0.0
Lane LOS	C	D	A	
Approach Delay (s)	22.3	32.9	0.2	
Approach LOS	C	D		

Intersection Summary				
Average Delay		7.1		
Intersection Capacity Utilization		42.2%	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	684	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	712	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	377	728	2	731	726	359	0			718		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	377	728	2	731	726	359	0			718		
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 %	99	98	100	100	95	100	100			100		
cM capacity (veh/h)	537	351	1086	308	353	644	1593			879		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	361	361
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	432	371	1593	1700
Volume to Capacity	0.03	0.05	0.00	0.21
Queue Length 95th (ft)	2	4	0	0
Control Delay (s)	13.6	15.2	0.1	0.0
Lane LOS	B	C	A	
Approach Delay (s)	13.6	15.2	0.1	
Approach LOS	B	C		

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		32.9%	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)	10	6	0	0	90	8	19	648	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	22	753	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	486	812	4	810	808	384	3			764		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	486	812	4	810	808	384	3			764		
tC, single (s)	7.9	6.9	7.2	7.6	6.9	7.3	4.3			4.3		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.4	3.6	4.2	3.5	2.3			2.3		
p0 queue free %	96	97	100	100	62	98	99			100		
cM capacity (veh/h)	290	274	1034	255	276	564	1571			785		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	399	384
Volume Left	12	0	22	0
Volume Right	0	9	0	7
cSH	284	288	1571	1700
Volume to Capacity	0.07	0.40	0.01	0.23
Queue Length 95th (ft)	5	45	1	0
Control Delay (s)	18.6	25.5	0.5	0.0
Lane LOS	C	D	A	
Approach Delay (s)	18.6	25.5	0.3	
Approach LOS	C	D		

Intersection Summary				
Average Delay		3.8		
Intersection Capacity Utilization		36.4%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	84	22	0	0	0	0	3	511	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	26	0	0	0	0	4	608	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	636	630	312	329	635	7	621			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	300	293	0	0	298	7	282			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	4.1	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	95	100	100			100		
cM capacity (veh/h)	498	510	911	852	523	1055	1116			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	126	308	314
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	559	753	1541	1700
Volume to Capacity	0.03	0.17	0.00	0.18
Queue Length 95th (ft)	2	15	0	0
Control Delay (s)	11.7	10.7	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.7	10.7	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.1		
Intersection Capacity Utilization		35.6%	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	572	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	615	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	652	644	316	341	650	4	628			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	652	644	316	341	650	4	628			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	391	686	574	388	1080	950			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	318	320
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	416	480	1576	1700
Volume to Capacity	0.04	0.06	0.01	0.19
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	14.0	13.0	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	14.0	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	527	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	561	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	630			0			645	623	317	327	657	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	630			0			645	623	317	327	657	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)	948			1565			328	401	685	564	382	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	294	349	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	407	503
Volume to Capacity	0.01	0.21	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	0	0	0	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	0	0	0	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	49			29			70	78	49	70	70	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	49			29			70	78	49	70	70	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)	1571			1584			922	658	1020	908	810	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	49	0	5
Volume Left	0	0	0	5
Volume Right	17	0	0	0
cSH	1571	1584	1700	908
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	0.0	9.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	9.0
Approach LOS			A	A

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	13.3%	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	44	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	48	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	61	48	49			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	48	49			
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)	944	1020	1571			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	49
Volume Left	1	1	0
Volume Right	1	0	1
cSH	981	1571	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

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	571	4	4	615	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	656	5	5	707	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	707			661			1501	1453	659	1461	1459	710
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	707			661			1501	1453	659	1461	1459	710
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 %	95			100			77	97	99	94	100	88
cM capacity (veh/h)	851			937			81	118	448	95	117	419

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	661	5	714	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	851	1700	937	1700	103	307
Volume to Capacity	0.05	0.39	0.00	0.42	0.27	0.18
Queue Length 95th (ft)	4	0	0	0	25	16
Control Delay (s)	9.4	0.0	8.9	0.0	52.4	19.2
Lane LOS	A		A		F	C
Approach Delay (s)	0.5		0.1		52.4	19.2
Approach LOS					F	C

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	510	10	15	566	98	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	554	11	16	615	107	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	722			565			1330	1351	560	1347	1303	668
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	722			565			1330	1351	560	1347	1303	668
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			92	89	92	46	96	94
cM capacity (veh/h)	845			968			109	137	506	105	155	460

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	584	738	65	92
Volume Left	18	16	9	57
Volume Right	11	107	41	29
cSH	845	968	239	144
Volume to Capacity	0.02	0.02	0.27	0.64
Queue Length 95th (ft)	2	1	27	87
Control Delay (s)	0.6	0.4	25.6	66.9
Lane LOS	A	A	D	F
Approach Delay (s)	0.6	0.4	25.6	66.9
Approach LOS			D	F

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	60.3%	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	466	2	4	0	459	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	524	2	4	0	516	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	516			526			556	1072	525	606	557	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	516			526			556	1072	525	606	557	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	83	94	100	100	100
cM capacity (veh/h)	1025			460			435	216	553	331	430	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	526	4	516	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	516	33
cSH	1025	1700	460	1700	304
Volume to Capacity	0.01	0.31	0.01	0.30	0.23
Queue Length 95th (ft)	1	0	1	0	21
Control Delay (s)	8.6	0.0	12.9	0.0	20.3
Lane LOS	A		B		C
Approach Delay (s)	0.2		0.1		20.3
Approach LOS					C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

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

8/12/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	240	0	37	0	0	0	31	228	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)	282	0	44	0	0	0	36	268	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			44		605	608	0	873	586	22
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			44		605	608	0	873	586	22
tC, single (s)	4.7			4.1		7.6	6.6	6.9	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.8			2.2		4.0	4.0	3.9	3.5	4.0	3.3
p0 queue free %	78			100		100	89	71	98	89	100
cM capacity (veh/h)	1305			1565		265	318	924	148	333	1061

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	326	0	305	40
Volume Left	282	0	0	2
Volume Right	44	0	268	0
cSH	1305	1700	753	310
Volume to Capacity	0.22	0.00	0.40	0.13
Queue Length 95th (ft)	21	0	49	11
Control Delay (s)	7.6	0.0	13.0	18.3
Lane LOS	A		B	C
Approach Delay (s)	7.6	0.0	13.0	18.3
Approach LOS			B	C

Intersection Summary			
Average Delay	10.7		
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	110	120	0	99	178	174
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	120	130	0	108	193	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			250		292	185
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			250		292	185
tC, single (s)			4.1		6.9	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.0	3.3
p0 queue free %			100		68	78
cM capacity (veh/h)			1327		607	863

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	250	108	383
Volume Left	0	0	193
Volume Right	130	0	189
cSH	1700	1327	711
Volume to Capacity	0.15	0.00	0.54
Queue Length 95th (ft)	0	0	81
Control Delay (s)	0.0	0.0	15.8
Lane LOS			C
Approach Delay (s)	0.0	0.0	15.8
Approach LOS			C

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	0	58	0	0	58	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	63	0	0	63	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			63		32	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			63		32	32
tC, single (s)			4.1		7.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.4	3.3
p0 queue free %			100		92	100
cM capacity (veh/h)			1540		782	1042

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	63	0	63
Volume Left	0	0	63
Volume Right	63	0	0
cSH	1700	1700	782
Volume to Capacity	0.04	0.00	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.0	10.0
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.0
Approach LOS			B

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	13.6%	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)	11	510	4	15	609	31	33	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			0.96	1.00		0.97	
Satd. Flow (prot)		1500			1601			1780	1538		1747	
Flt Permitted		0.99			0.99			0.73	1.00		0.79	
Satd. Flow (perm)		1481			1582			1348	1538		1420	
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	548	4	16	655	33	35	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	564	0	0	703	0	0	43	3	0	44	0
Heavy Vehicles (%)	7%	27%	7%	2%	19%	2%	2%	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)		34.2			34.2			6.0	6.0		6.0	
Effective Green, g (s)		34.7			34.7			6.5	6.5		6.5	
Actuated g/C Ratio		0.71			0.71			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)		1045			1116			178	203		188	
v/s Ratio Prot												
v/s Ratio Perm		0.38			c0.44			c0.03	0.00		0.03	
v/c Ratio		0.54			0.63			0.24	0.02		0.23	
Uniform Delay, d1		3.4			3.8			19.1	18.6		19.1	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.5			1.1			0.7	0.0		0.6	
Delay (s)		4.0			5.0			19.8	18.6		19.8	
Level of Service		A			A			B	B		B	
Approach Delay (s)		4.0			5.0			19.4			19.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	49.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	180	266	19	181
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	205	302	22	206
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		915	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					711	
vCu, unblocked vol			220		915	203
tC, single (s)			5.1		6.5	7.2
tC, 2 stage (s)					5.5	
tF (s)			3.1		3.6	4.2
p0 queue free %			78		94	68
cM capacity (veh/h)			939		349	646

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	205	302	227
Volume Left	0	0	205	0	22
Volume Right	0	17	0	0	206
cSH	1700	1700	939	1700	598
Volume to Capacity	0.12	0.01	0.22	0.18	0.38
Queue Length 95th (ft)	0	0	21	0	44
Control Delay (s)	0.0	0.0	9.9	0.0	14.7
Lane LOS			A		B
Approach Delay (s)	0.0		4.0		14.7
Approach LOS					B

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	41.6%	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)	119	1323	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)		3345						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3345						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	1423	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	1563	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)		2623						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.47									c0.03	
v/c Ratio		0.60						0.19			0.33	
Uniform Delay, d1		3.1						28.8			29.3	
Progression Factor		1.00						1.00			0.59	
Incremental Delay, d2		1.0						0.3			0.6	
Delay (s)		4.1						29.1			17.9	
Level of Service		A						C			B	
Approach Delay (s)		4.1			0.0			29.1			17.9	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.1	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	54.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1335	71	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			0.65	
Satd. Flow (perm)		3335						1711			1086	
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	1571	84	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	16	0	0	0	0
Lane Group Flow (vph)	0	1669	0	0	0	0	0	220	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)		37.6						15.3			15.3	
Effective Green, g (s)		37.6						15.3			15.3	
Actuated g/C Ratio		0.62						0.25			0.25	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		2059						430			273	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.50									c0.17	
v/c Ratio		0.81						0.51			0.68	
Uniform Delay, d1		8.9						19.6			20.6	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.5						1.0			6.9	
Delay (s)		11.4						20.6			27.6	
Level of Service		B						C			C	
Approach Delay (s)		11.4			0.0			20.6			27.6	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1329	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)		3353						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3353						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	1370	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	1411	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)		34.7						4.5			4.5	
Effective Green, g (s)		35.2						5.0			5.0	
Actuated g/C Ratio		0.73						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)		2449						166			141	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.42									c0.04	
v/c Ratio		0.58						0.17			0.39	
Uniform Delay, d1		3.0						19.7			20.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.3						0.5			1.8	
Delay (s)		3.4						20.2			22.0	
Level of Service		A						C			C	
Approach Delay (s)		3.4			0.0			20.2			22.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	48.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.1%	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)	52	1353	26	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)	54	1395	27	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			1422			1539	1515	711	858	1529	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1422			1539	1515	711	858	1529	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	72	90	74	59	100
cM capacity (veh/h)	1607			475			52	113	373	175	114	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	751	724	69	92
Volume Left	54	0	0	45
Volume Right	0	27	37	0
cSH	1607	1700	181	138
Volume to Capacity	0.03	0.43	0.38	0.67
Queue Length 95th (ft)	3	0	41	91
Control Delay (s)	0.9	0.0	36.6	71.9
Lane LOS	A		E	F
Approach Delay (s)	0.5		36.6	71.9
Approach LOS			E	F

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	1033	12	0	0	0	0	535	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	3356						2935				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3356						2935				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	1123	13	0	0	0	0	582	9	0	0	0
RTOR Reduction (vph)	45	1	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	63	1135	0	0	0	0	0	590	0	0	0	0
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	4%	23%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	25.9	25.9						15.7				
Effective Green, g (s)	26.9	26.9						16.7				
Actuated g/C Ratio	0.52	0.52						0.32				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	913	1750						950				
v/s Ratio Prot		c0.34						c0.20				
v/s Ratio Perm	0.04											
v/c Ratio	0.07	0.65						0.62				
Uniform Delay, d1	6.1	8.9						14.8				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.8						1.3				
Delay (s)	6.2	9.8						16.0				
Level of Service	A	A						B				
Approach Delay (s)		9.5			0.0			16.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	51.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	17	1254	70	0	0	0	0	27	345	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					0.87	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2716	1300					1555	1519		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.68	
Satd. Flow (perm)		2716	1300					1555	1519		1264	
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	1348	75	0	0	0	0	29	371	44	34	0
RTOR Reduction (vph)	0	0	10	0	0	0	0	26	26	0	0	0
Lane Group Flow (vph)	0	1366	65	0	0	0	0	177	171	0	78	0
Heavy Vehicles (%)	6%	13%	6%	2%	2%	2%	2%	2%	1%	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)		47.7	47.7					13.3	13.3		13.3	
Effective Green, g (s)		48.2	48.2					13.8	13.8		13.8	
Actuated g/C Ratio		0.69	0.69					0.20	0.20		0.20	
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)		1870	895					307	299		249	
v/s Ratio Prot		c0.50						c0.11				
v/s Ratio Perm			0.05						0.11		0.06	
v/c Ratio		0.73	0.07					0.58	0.57		0.31	
Uniform Delay, d1		6.8	3.6					25.5	25.4		24.0	
Progression Factor		0.43	0.43					1.00	1.00		1.00	
Incremental Delay, d2		2.1	0.1					2.6	2.6		0.7	
Delay (s)		5.0	1.7					28.1	28.1		24.8	
Level of Service		A	A					C	C		C	
Approach Delay (s)		4.9			0.0			28.1			24.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	10.5	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	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1225	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)		2712						1314			1462	
Flt Permitted		1.00						1.00			0.88	
Satd. Flow (perm)		2712						1314			1309	
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	1289	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	33	0	0	0	0
Lane Group Flow (vph)	0	1337	0	0	0	0	0	71	0	0	18	0
Heavy Vehicles (%)	6%	13%	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)		53.8						8.2			8.2	
Effective Green, g (s)		53.8						8.2			8.2	
Actuated g/C Ratio		0.77						0.12			0.12	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2084						154			153	
v/s Ratio Prot								c0.05				
v/s Ratio Perm		0.49									0.01	
v/c Ratio		0.64						0.46			0.12	
Uniform Delay, d1		3.7						28.8			27.7	
Progression Factor		0.58						1.00			1.00	
Incremental Delay, d2		0.7						2.2			0.3	
Delay (s)		2.8						31.0			28.0	
Level of Service		A						C			C	
Approach Delay (s)		2.8			0.0			31.0			28.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1084	16	0	0	0	0	0	29	289	204	0
Ideal Flow (vphpl)	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)		2689							1289	1681	1403	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2689							1289	1681	1403	
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	1141	17	0	0	0	0	0	31	304	215	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	166	12	0
Lane Group Flow (vph)	0	1156	0	0	0	0	0	0	4	89	252	0
Heavy Vehicles (%)	6%	14%	6%	2%	2%	2%	2%	1%	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)		29.5							9.5	17.5	17.5	
Effective Green, g (s)		30.0							10.0	18.0	18.0	
Actuated g/C Ratio		0.43							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)		1152							184	432	361	
v/s Ratio Prot		c0.43							c0.00	0.05	c0.18	
v/s Ratio Perm												
v/c Ratio		1.00							0.02	0.21	0.70	
Uniform Delay, d1		20.0							25.8	20.4	23.5	
Progression Factor		1.14							1.00	1.00	1.00	
Incremental Delay, d2		25.7							0.2	1.1	10.7	
Delay (s)		48.5							26.0	21.5	34.2	
Level of Service		D							C	C	C	
Approach Delay (s)		48.5			0.0			26.0			28.0	
Approach LOS		D			A			C			C	

Intersection Summary			
HCM Average Control Delay	41.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.2%	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)	7	561	12	0	0	0	0	68	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						0.96		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2477						1446		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2477						1446		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	597	13	0	0	0	0	72	27	489	50	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	0	615	0	0	0	0	0	79	0	269	270	0
Heavy Vehicles (%)	6%	24%	6%	2%	2%	2%	2%	1%	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)		26.3						7.6		22.6	22.6	
Effective Green, g (s)		26.8						8.1		23.1	23.1	
Actuated g/C Ratio		0.38						0.12		0.33	0.33	
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)		948						167		555	449	
v/s Ratio Prot								c0.05		0.16	c0.20	
v/s Ratio Perm		0.25										
v/c Ratio		0.65						0.47		0.48	0.60	
Uniform Delay, d1		17.7						28.9		18.7	19.6	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.5						2.1		3.0	5.9	
Delay (s)		19.3						30.9		21.7	25.5	
Level of Service		B						C		C	C	
Approach Delay (s)		19.3			0.0			30.9			23.6	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.4%	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	487	0	676	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)		1490		1840		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1490		1840		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	541	0	751	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	541	0	751	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	25%	2%	17%	3%	3%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		34.8		34.8		
Effective Green, g (s)		34.8		34.8		
Actuated g/C Ratio		0.78		0.78		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1157		1429		
v/s Ratio Prot		0.36		c0.41		
v/s Ratio Perm						
v/c Ratio		0.47		0.53		
Uniform Delay, d1		1.8		1.9		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.3		0.4		
Delay (s)		2.1		2.2		
Level of Service		A		A		
Approach Delay (s)	2.1			2.2	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	2.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	44.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	882	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	919	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	82	0
Lane Group Flow (vph)	0	0	0	0	955	0	0	189	0	0	265	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)					49.2			11.8			11.8	
Effective Green, g (s)					49.7			12.3			12.3	
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)					2478			534			526	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.27			0.06				
v/c Ratio					0.39			0.35			0.50	
Uniform Delay, d1					4.1			25.4			26.1	
Progression Factor					1.16			1.03			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					5.1			26.5			26.9	
Level of Service					A			C			C	
Approach Delay (s)		0.0			5.1			26.5			26.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.9	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	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)	0	0	0	14	1184	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	1260	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	52
Lane Group Flow (vph)	0	0	0	0	1293	0	0	419	0	0	54	238
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	0.54
Uniform Delay, d1					8.5			24.8			19.2	21.8
Progression Factor					0.66			1.00			1.00	1.00
Incremental Delay, d2					1.4			26.1			0.5	4.8
Delay (s)					7.0			50.8			19.7	26.6
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.0			50.8			25.5	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.4%	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)	0	0	0	44	1120	92	32	80	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		0.99			1.00	
Satd. Flow (prot)					3567	1554		1818			1794	
Flt Permitted					1.00	1.00		0.85			1.00	
Satd. Flow (perm)					3567	1554		1575			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	84	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	118	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)					28.9	28.9		14.7			14.7	
Effective Green, g (s)					28.9	28.9		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)					1998	870		449			511	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.34	0.03		0.07				
v/c Ratio					0.61	0.06		0.26			0.59	
Uniform Delay, d1					7.6	5.2		14.3			15.8	
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		14.6			17.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.0			14.6			17.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	51.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	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	18	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	20	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	1396	1386	650
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1300			0			758	1392	0	1396	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	86	100	100	86	97
cM capacity (veh/h)	529			1622			251	138	1084	89	140	417

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	690	657	77	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	207	188
Volume to Capacity	0.03	0.39	0.37	0.17
Queue Length 95th (ft)	2	0	40	15
Control Delay (s)	0.8	0.0	32.3	28.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		32.3	28.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	51.1%	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	596	18	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	0.95				1.00
Satd. Flow (prot)					3361		1394	1412				1611
Flt Permitted					1.00		0.95	0.95				1.00
Satd. Flow (perm)					3361		1394	1412				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	670	20	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	150	150	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1304	0	192	198	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	23%	7%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					28.6		13.4	13.4				0.7
Effective Green, g (s)					29.6		14.4	14.4				1.7
Actuated g/C Ratio					0.51		0.25	0.25				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)					1724		348	352				47
v/s Ratio Prot					c0.39							
v/s Ratio Perm							0.14	0.14				c0.00
v/c Ratio					0.76		0.55	0.56				0.01
Uniform Delay, d1					11.2		18.8	18.9				27.2
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.9		1.9	2.1				0.0
Delay (s)					13.1		20.7	21.0				27.2
Level of Service					B		C	C				C
Approach Delay (s)		0.0			13.1			20.8			27.2	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	57.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1354	177	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	1425	186	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	1425				1425	713
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1425				1425	713
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	76
cM capacity (veh/h)	473				124	370

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	713	713	186	89
Volume Left	0	0	0	0
Volume Right	0	0	186	89
cSH	1700	1700	1700	370
Volume to Capacity	0.42	0.42	0.11	0.24
Queue Length 95th (ft)	0	0	0	23
Control Delay (s)	0.0	0.0	0.0	17.8
Lane LOS				C
Approach Delay (s)	0.0			17.8
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	462	1209	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)	476	1246	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			476	476	476	1723	1723	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			476	476	476	1723	1723	
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)			488	589	499	89	367	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	892	831	8	101
Volume Left	0	0	8	0
Volume Right	415	831	0	0
cSH	1700	1700	499	89
Volume to Capacity	0.52	0.49	0.02	1.13
Queue Length 95th (ft)	0	0	1	174
Control Delay (s)	0.0	0.0	12.3	222.3
Lane LOS			B	F
Approach Delay (s)	0.0		206.4	
Approach LOS			F	

Intersection Summary			
Average Delay	12.3		
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	75	0	0	1329	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)	1787			3282		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1787			3282		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	0	0	1445	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	82	0	0	1445	0	508
Heavy Vehicles (%)	1%	2%	16%	10%	3%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	15.9			52.2		77.1
Effective Green, g (s)	16.4			52.7		77.1
Actuated g/C Ratio	0.21			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	380			2243		2787
v/s Ratio Prot	c0.05			c0.44		
v/s Ratio Perm						c0.18
v/c Ratio	0.22			0.64		0.18
Uniform Delay, d1	25.0			6.9		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			1.4		0.1
Delay (s)	25.1			8.3		0.1
Level of Service	C			A		A
Approach Delay (s)	25.1			8.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	4.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	768	584	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)			1504	1845	3467	
Flt Permitted			0.37	1.00	1.00	
Satd. Flow (perm)			582	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	800	608	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	800	608	518	0
Heavy Vehicles (%)	2%	2%	16%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			57.2	61.7	25.8	
Effective Green, g (s)			58.2	62.2	26.3	
Actuated g/C Ratio			0.75	0.81	0.34	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			821	1488	1183	
v/s Ratio Prot			c0.40	0.33	0.15	
v/s Ratio Perm			c0.33			
v/c Ratio			0.97	0.41	0.44	
Uniform Delay, d1			11.0	2.1	19.7	
Progression Factor			0.81	0.10	1.00	
Incremental Delay, d2			21.8	0.6	0.1	
Delay (s)			30.6	0.8	19.8	
Level of Service			C	A	B	
Approach Delay (s)	0.0			17.8	19.8	
Approach LOS	A			B	B	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	18.9
Intersection Capacity Utilization	63.3%	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

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	1051	230	0	0	0	21	0	339	251	0	0	0
Ideal Flow (vphpl)	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)	1633	1671				1277		2266				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1633	1671				1277		2266				
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)	1130	247	0	0	0	23	0	365	270	0	0	0
RTOR Reduction (vph)	294	75	0	0	0	23	0	165	0	0	0	0
Lane Group Flow (vph)	384	624	0	0	0	0	0	470	0	0	0	0
Heavy Vehicles (%)	5%	4%	2%	0%	16%	3%	5%	14%	44%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	34.6	34.6				2.0		21.4				
Effective Green, g (s)	35.1	35.1				1.0		21.9				
Actuated g/C Ratio	0.50	0.50				0.01		0.31				
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)	819	838				18		709				
v/s Ratio Prot								c0.21				
v/s Ratio Perm	0.24	0.37				c0.00						
v/c Ratio	0.47	0.74				0.02		0.66				
Uniform Delay, d1	11.4	13.9				34.0		20.9				
Progression Factor	0.81	0.12				1.00		1.00				
Incremental Delay, d2	1.0	3.1				0.1		2.3				
Delay (s)	10.2	4.8				34.2		23.2				
Level of Service	B	A				C		C				
Approach Delay (s)		7.5			34.2			23.2			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.2%	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	278	18	33	1385	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			1376			4887				
Flt Permitted		0.84			1.00			1.00				
Satd. Flow (perm)		1263			1376			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	293	19	35	1458	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	308	0	0	1499	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	39%	5%	5%	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)		21.1			21.1			39.9				
Effective Green, g (s)		21.6			21.6			40.4				
Actuated g/C Ratio		0.31			0.31			0.58				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		390			425			2820				
v/s Ratio Prot					c0.22							
v/s Ratio Perm		0.03						0.31				
v/c Ratio		0.10			0.72			0.53				
Uniform Delay, d1		17.3			21.5			9.0				
Progression Factor		0.71			1.00			0.70				
Incremental Delay, d2		0.1			6.0			0.5				
Delay (s)		12.3			27.6			6.9				
Level of Service		B			C			A				
Approach Delay (s)		12.3			27.6			6.9			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
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)	90	144	0	0	82	114	52	1450	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		4521				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4521				
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	55	1526	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	25	0	9	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	71	0	1673	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	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		0.37				
v/c Ratio		0.78			0.22	0.18		0.59				
Uniform Delay, d1		24.3			20.6	20.4		7.5				
Progression Factor		0.96			1.00	1.00		1.99				
Incremental Delay, d2		11.3			0.3	0.2		0.8				
Delay (s)		34.7			20.9	20.7		15.8				
Level of Service		C			C	C		B				
Approach Delay (s)		34.7			20.8			15.8			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	18.5	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	58.5%	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	1446	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			4380				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4380				
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	1662	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	20	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	99	0	0	1743	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			0.32			0.56				
Uniform Delay, d1		26.5			25.4			4.7				
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	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	48.7%	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)	233	25	0	0	32	18	42	1631	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			4391				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			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)	248	27	0	0	34	19	45	1735	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	1800	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)		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			10.1				
Progression Factor		0.67			1.00			0.60				
Incremental Delay, d2		22.1			0.1			1.4				
Delay (s)		37.7			17.8			7.5				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.8			7.5			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	60.4%	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

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	53	15	0	0	7	10	22	1603	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	1822	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	1864	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	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)		8.8			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						0.42				
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	48.8%	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

8/12/2009

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	1310	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	1456	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	1513	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			29.3						2.6	
Level of Service		C			C						A	
Approach Delay (s)		29.2			29.3			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	43.5%	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	145	35	24	56	0	0	0	0	8	1169	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			1468						4403	
Flt Permitted		1.00			0.88						1.00	
Satd. Flow (perm)		1451			1305						4403	
Peak-hour factor, PHF	0.92	0.92	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	61	0	0	0	0	9	1271	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	87	0	0	0	0	0	1357	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			268						2994	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.07						0.31	
v/c Ratio		0.61			0.32						0.45	
Uniform Delay, d1		25.2			23.7						5.2	
Progression Factor		1.00			1.03						0.26	
Incremental Delay, d2		3.5			0.7						0.5	
Delay (s)		28.7			25.0						1.8	
Level of Service		C			C						A	
Approach Delay (s)		28.7			25.0			0.0			1.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.2	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	48.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1184	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	1287	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	1333	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			0.56						0.24	
Incremental Delay, d2		1.9			1.4						0.3	
Delay (s)		30.3			17.1						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.3			17.1			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	40.4%	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	104	15	57	72	0	0	0	0	131	1047	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			1823						4568	
Flt Permitted		1.00			0.84						0.99	
Satd. Flow (perm)		1831			1557						4568	
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	76	0	0	0	0	138	1102	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	136	0	0	0	0	0	1269	0
Heavy Vehicles (%)	2%	2%	2%	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)		536			456						2708	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.28	
v/c Ratio		0.22			0.30						0.47	
Uniform Delay, d1		18.7			19.2						8.0	
Progression Factor		1.00			0.95						0.86	
Incremental Delay, d2		0.9			1.6						0.6	
Delay (s)		19.6			19.8						7.4	
Level of Service		B			B						A	
Approach Delay (s)		19.6			19.8			0.0			7.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.5	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	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	148	151	0	0	0	0	21	345	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)					1013						2486	1400
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					1013						2486	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	157	161	0	0	0	0	22	367	814
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	201	201
Lane Group Flow (vph)	0	0	0	0	318	0	0	0	0	0	595	206
Heavy Vehicles (%)	2%	4%	10%	89%	5%	2%	2%	2%	2%	0%	14%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					26.0						35.0	35.0
Effective Green, g (s)					26.5						35.5	35.5
Actuated g/C Ratio					0.38						0.51	0.51
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					383						1261	710
v/s Ratio Prot												
v/s Ratio Perm					0.31						0.24	0.15
v/c Ratio					0.83						0.47	0.29
Uniform Delay, d1					19.7						11.2	10.0
Progression Factor					0.98						0.22	0.21
Incremental Delay, d2					12.6						1.2	0.9
Delay (s)					31.9						3.6	3.0
Level of Service					C						A	A
Approach Delay (s)		0.0			31.9			0.0			3.4	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.4%	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	1225	22	0	0	0	0	0	0	19	454	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)		3113									2343	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3113									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	1408	25	0	0	0	0	0	0	22	522	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	1432	0	0	0	0	0	0	0	0	539	0
Heavy Vehicles (%)	5%	4%	10%	2%	2%	2%	2%	6%	16%	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)		1694									800	
v/s Ratio Prot		c0.46										
v/s Ratio Perm											0.23	
v/c Ratio		0.85									0.67	
Uniform Delay, d1		13.5									19.7	
Progression Factor		0.79									1.33	
Incremental Delay, d2		4.5									1.9	
Delay (s)		15.2									28.2	
Level of Service		B									C	
Approach Delay (s)		15.2			0.0			0.0			28.2	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.2%	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)	118	657	0	0	0	0	0	1457	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	1534	418	0	0	0
RTOR Reduction (vph)	0	13	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	803	0	0	0	0	0	1534	381	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	12%	5%	4%	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						1.88	2.16			
Incremental Delay, d2		1.2						3.4	2.0			
Delay (s)		21.3						22.7	18.0			
Level of Service		C						C	B			
Approach Delay (s)		21.3			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	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	553	411	76	1403	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	1446	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	1519	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	5%	10%	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			15.0				
Progression Factor					1.00			0.76				
Incremental Delay, d2					8.1			8.8				
Delay (s)					29.7			20.2				
Level of Service					C			C				
Approach Delay (s)		0.0			29.7			20.2			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	24.0	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	76.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1114	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									4392	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4392	
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	1198	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	1535	0
Heavy Vehicles (%)	2%	2%	2%	19%	4%	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)		12.7									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									3062	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.35	
v/c Ratio		0.56									0.50	
Uniform Delay, d1		25.8									4.9	
Progression Factor		1.00									0.65	
Incremental Delay, d2		1.3									0.5	
Delay (s)		27.1									3.7	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			3.7	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.4%	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	324	296	0	0	0	0	0	1268	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	1378	68
RTOR Reduction (vph)	0	0	0	26	26	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	192	430	0	0	0	0	0	1440	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	1.26						1.00	
Incremental Delay, d2				1.9	0.3						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	76.1%	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	1234	36	28	1023	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	3342		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3126		1727	3342		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	1452	42	33	1204	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	1506	0	33	1206	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	8%	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	2314		261	259			90	
v/s Ratio Prot				0.02	c0.36		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.52		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.7		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.55		1.00	1.00			1.00	
Incremental Delay, d2		3.3		2.9	0.7		22.4	19.9			1.7	
Delay (s)		20.4		59.5	5.4		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.4			6.9			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	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1571	102	53	1075	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	3343		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	3343		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	1636	106	55	1120	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	1739	0	55	1120	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	13%	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	1907		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	0.93		0.50	0.59		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.8		53.3	16.4		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	8.4		2.5	1.3		21.0	2.2			2.1	
Delay (s)	42.3	22.6		55.9	17.7		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		22.9			19.5			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.4	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	65.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	919	3	516	859	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		2935	1517		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3260		2935	1517		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1135	4	637	1060	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1139	0	1156	541	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	13%	7%	14%	14%	2%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	36.9		39.6	88.5		39.6
Effective Green, g (s)	38.9		41.6	88.5		41.6
Actuated g/C Ratio	0.44		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)	1433		1380	1517		1248
v/s Ratio Prot	c0.35		c0.39	0.36		0.14
v/s Ratio Perm						
v/c Ratio	0.79		0.84	0.36		0.30
Uniform Delay, d1	21.4		20.5	0.0		14.5
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	3.0		4.5	0.7		0.1
Delay (s)	24.4		25.0	0.7		14.6
Level of Service	C		C	A		B
Approach Delay (s)	24.4		17.3		14.6	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	88.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.7%	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	755	1	3	460	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	795	1	3	484	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	1370	1362	520	1349	1391	797	548			797		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1370	1362	520	1349	1391	797	548			797		
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	96	100	100	98	98			100		
cM capacity (veh/h)	118	144	556	121	138	389	1020			824		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	802	3	542
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	556	389	1020	1020	824	1700
Volume to Capacity	0.04	0.02	0.02	0.02	0.00	0.32
Queue Length 95th (ft)	3	2	1	1	0	0
Control Delay (s)	11.7	14.5	8.6	0.4	9.4	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	11.7	14.5	0.5		0.1	
Approach LOS	B	B				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	44.9%	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)	24	1	10	0	2	4	14	710	2	2	412	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	763	2	2	443	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	1262	1259	459	1253	1273	765	474			766		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1262	1259	459	1253	1273	765	474			766		
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 %	82	99	98	100	99	99	99			100		
cM capacity (veh/h)	143	169	604	144	165	405	1093			848		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	766	2	474
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	184	273	1093	1700	848	1700
Volume to Capacity	0.20	0.02	0.01	0.45	0.00	0.28
Queue Length 95th (ft)	19	2	1	0	0	0
Control Delay (s)	29.6	18.5	8.3	0.0	9.3	0.0
Lane LOS	D	C	A		A	
Approach Delay (s)	29.6	18.5	0.2		0.0	
Approach LOS	D	C				

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	52.8%	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	513	2	2	222	284
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	590	2	2	255	326
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1025	1020	418	859	1182	591	582			592		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1025	1020	418	859	1182	591	582			592		
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 %	89	100	99	100	97	99	100			100		
cM capacity (veh/h)	207	233	639	265	182	491	1003			994		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	592	2	582
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	326
cSH	228	252	1003	1700	994	1700
Volume to Capacity	0.11	0.04	0.00	0.35	0.00	0.34
Queue Length 95th (ft)	9	3	0	0	0	0
Control Delay (s)	22.7	19.9	8.6	0.0	8.6	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	22.7	19.9	0.0		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	43.6%	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)	0	490	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	516	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			547			666	532	532	576	547	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			547			666	532	532	576	547	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	46	99
cM capacity (veh/h)	1604			1032			212	455	550	365	444	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	547	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	450	459
Volume to Capacity	0.00	0.00	0.20	0.56
Queue Length 95th (ft)	0	0	18	83
Control Delay (s)	0.0	0.0	15.0	22.3
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	15.0	22.3
Approach LOS			B	C

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	685	1	3	631	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)	737	1	3	678	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			738		1422	737
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			738		1422	737
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)			842		117	349

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	738	682	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	842	135
Volume to Capacity	0.43	0.00	0.08
Queue Length 95th (ft)	0	0	6
Control Delay (s)	0.0	0.1	33.9
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	33.9
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	46.1%	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	678	0	2	656	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	737	0	2	713	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	725			740			1490	1487	742	1481	1481	720
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	725			740			1490	1487	742	1481	1481	720
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)	864			851			97	124	414	99	121	420

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	746	726	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	864	851	124	149
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	34.4	32.5
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.1	34.4	32.5
Approach LOS			D	D

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
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	681	1	1	651	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	740	1	1	708	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	709			741			1454	1454	741	1454	1454	708
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	709			741			1454	1454	741	1454	1454	708
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)	876			852			108	131	416	108	130	435

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	742	710	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	876	852	171	172
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	26.3	26.1
Lane LOS	A	A	D	D
Approach Delay (s)	0.0	0.0	26.3	26.1
Approach LOS			D	D

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	46.7%	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	596	34	10	596	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	655	37	11	655	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	669			692			1493	1466	676	1465	1478	664
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	669			692			1493	1466	676	1465	1478	664
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
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 %	94			99			93	98	100	81	99	93
cM capacity (veh/h)	905			871			89	120	456	98	117	459

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	743	678	11	54
Volume Left	51	11	7	19
Volume Right	37	12	2	34
cSH	905	871	113	197
Volume to Capacity	0.06	0.01	0.10	0.27
Queue Length 95th (ft)	4	1	8	27
Control Delay (s)	1.4	0.3	40.2	30.1
Lane LOS	A	A	E	D
Approach Delay (s)	1.4	0.3	40.2	30.1
Approach LOS			E	D

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	615	0	0	27	616
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	668	0	0	29	670
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			728	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			728	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)			383	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	668	29	670
Volume Left	0	29	0
Volume Right	668	0	0
cSH	1700	1578	1700
Volume to Capacity	0.39	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	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	628	5	0	16	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)	690	5	0	18	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		1383	1383	1386	0
vC1, stage 1 conf vol			1383	1383	0	
vC2, stage 2 conf vol			0	0	1386	
vCu, unblocked vol	0		1383	1383	1386	0
tC, single (s)	4.3		7.1	6.5	6.5	6.2
tC, 2 stage (s)			6.1	5.5	5.5	
tF (s)	2.4		3.5	4.0	4.0	3.3
p0 queue free %	55		100	82	100	100
cM capacity (veh/h)	1524		86	99	104	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	460	236	18
Volume Left	460	230	0
Volume Right	0	5	0
cSH	1524	1524	99
Volume to Capacity	0.45	0.45	0.18
Queue Length 95th (ft)	61	61	15
Control Delay (s)	9.3	9.2	49.1
Lane LOS	A	A	E
Approach Delay (s)	9.3		49.1
Approach LOS			E

Intersection Summary			
Average Delay	10.2		
Intersection Capacity Utilization	28.1%	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)	21	3	0	0	169	7	12	620	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	705	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	484	755	0	745	743	364	0			727		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	484	755	0	745	743	364	0			727		
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 %	91	99	100	100	44	99	99			100		
cM capacity (veh/h)	256	337	1091	300	341	636	1600			872		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	366	375
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	264	347	1600	1700
Volume to Capacity	0.10	0.58	0.01	0.22
Queue Length 95th (ft)	9	86	1	0
Control Delay (s)	20.2	28.6	0.3	0.0
Lane LOS	C	D	A	
Approach Delay (s)	20.2	28.6	0.2	
Approach LOS	C	D		

Intersection Summary			
Average Delay	6.6		
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)	7	6	0	0	16	2	5	634	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	660	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	351	676	2	679	673	333	0			666		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	351	676	2	679	673	333	0			666		
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 %	99	98	100	100	96	100	100			100		
cM capacity (veh/h)	561	376	1086	336	378	669	1593			920		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	335	335
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	458	397	1593	1700
Volume to Capacity	0.03	0.05	0.00	0.20
Queue Length 95th (ft)	2	4	0	0
Control Delay (s)	13.1	14.5	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.1	14.5	0.1	
Approach LOS	B	B		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	31.5%	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)	10	6	0	0	90	8	19	598	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	22	695	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	456	754	4	752	750	355	3			706		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	456	754	4	752	750	355	3			706		
tC, single (s)	7.9	6.9	7.2	7.6	6.9	7.3	4.3			4.3		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.4	3.6	4.2	3.5	2.3			2.3		
p0 queue free %	96	98	100	100	65	98	99			100		
cM capacity (veh/h)	316	298	1034	281	299	590	1571			828		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	370	355
Volume Left	12	0	22	0
Volume Right	0	9	0	7
cSH	309	312	1571	1700
Volume to Capacity	0.06	0.37	0.01	0.21
Queue Length 95th (ft)	5	41	1	0
Control Delay (s)	17.4	23.0	0.6	0.0
Lane LOS	C	C	A	
Approach Delay (s)	17.4	23.0	0.3	
Approach LOS	C	C		

Intersection Summary				
Average Delay		3.7		
Intersection Capacity Utilization		35.0%	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	22	0	0	0	0	3	461	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	26	0	0	0	0	4	549	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	577	571	282	299	575	7	561			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	288	281	0	0	286	7	270			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	4.1	3.4	2.2			2.3		
p0 queue free %	100	97	100	89	95	100	100			100		
cM capacity (veh/h)	519	528	930	870	542	1055	1150			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	126	278	284
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	578	773	1541	1700
Volume to Capacity	0.03	0.16	0.00	0.17
Queue Length 95th (ft)	2	15	0	0
Control Delay (s)	11.4	10.6	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.4	10.6	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.2		
Intersection Capacity Utilization		34.2%	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	522	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	561	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	598	590	289	314	597	4	574			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	598	590	289	314	597	4	574			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)	378	419	714	600	416	1080	995			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	291	294
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	446	509	1576	1700
Volume to Capacity	0.03	0.06	0.01	0.17
Queue Length 95th (ft)	3	5	1	0
Control Delay (s)	13.4	12.5	0.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	13.4	12.5	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		33.7%	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	477	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	507	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	577			0			591	570	290	300	604	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	577			0			591	570	290	300	604	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)	993			1565			360	430	712	591	409	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	268	323	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	436	531
Volume to Capacity	0.01	0.19	0.08	0.32
Queue Length 95th (ft)	1	0	6	35
Control Delay (s)	0.5	0.0	13.9	15.0
Lane LOS	A		B	B
Approach Delay (s)	0.2		13.9	15.0
Approach LOS			B	B

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	37.8%	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	0	0	0	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	0	0	0	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	49			29			70	78	49	70	70	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	49			29			70	78	49	70	70	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)	1571			1584			922	658	1020	908	810	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	49	0	5
Volume Left	0	0	0	5
Volume Right	17	0	0	0
cSH	1571	1584	1700	908
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	0.0	9.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	9.0
Approach LOS			A	A

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	13.3%	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	44	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	48	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	61	48	49			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	48	49			
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)	944	1020	1571			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	49
Volume Left	1	1	0
Volume Right	1	0	1
cSH	981	1571	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		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	521	4	4	565	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	599	5	5	649	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	649			603			1386	1338	601	1347	1344	653
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	649			603			1386	1338	601	1347	1344	653
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			81	98	99	95	100	89
cM capacity (veh/h)	895			984			99	140	484	115	138	452

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	603	5	656	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	895	1700	984	1700	124	344
Volume to Capacity	0.04	0.35	0.00	0.39	0.22	0.16
Queue Length 95th (ft)	3	0	0	0	20	14
Control Delay (s)	9.2	0.0	8.7	0.0	42.1	17.4
Lane LOS	A		A		E	C
Approach Delay (s)	0.6		0.1		42.1	17.4
Approach LOS					E	C

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	460	10	15	516	98	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	500	11	16	561	107	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	667			511			1222	1242	505	1238	1195	614
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	667			511			1222	1242	505	1238	1195	614
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	90	92	56	96	94
cM capacity (veh/h)	886			1015			131	159	544	128	180	494

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	529	684	65	92
Volume Left	18	16	9	57
Volume Right	11	107	41	29
cSH	886	1015	274	172
Volume to Capacity	0.02	0.02	0.24	0.54
Queue Length 95th (ft)	2	1	23	69
Control Delay (s)	0.6	0.4	22.2	48.1
Lane LOS	A	A	C	E
Approach Delay (s)	0.6	0.4	22.2	48.1
Approach LOS			C	E

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
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	416	2	4	0	409	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	467	2	4	0	460	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	460			470			500	960	469	549	501	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460			470			500	960	469	549	501	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	86	95	100	100	100
cM capacity (veh/h)	1076			495			474	252	595	370	463	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	470	4	460	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	460	33
cSH	1076	1700	495	1700	347
Volume to Capacity	0.01	0.28	0.01	0.27	0.20
Queue Length 95th (ft)	1	0	1	0	18
Control Delay (s)	8.4	0.0	12.3	0.0	17.9
Lane LOS	A		B		C
Approach Delay (s)	0.2		0.1		17.9
Approach LOS					C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

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

8/12/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	240	0	37	0	0	0	31	228	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)	282	0	44	0	0	0	36	268	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			44		605	608	0	873	586	22
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			44		605	608	0	873	586	22
tC, single (s)	4.7			4.1		7.6	6.5	6.9	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.8			2.2		4.0	4.0	3.9	3.5	4.0	3.3
p0 queue free %	78			100		100	89	71	98	89	100
cM capacity (veh/h)	1305			1565		265	318	924	148	333	1061

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	326	0	305	40
Volume Left	282	0	0	2
Volume Right	44	0	268	0
cSH	1305	1700	753	310
Volume to Capacity	0.22	0.00	0.40	0.13
Queue Length 95th (ft)	21	0	49	11
Control Delay (s)	7.6	0.0	13.0	18.3
Lane LOS	A		B	C
Approach Delay (s)	7.6	0.0	13.0	18.3
Approach LOS			B	C

Intersection Summary			
Average Delay	10.7		
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	110	120	0	99	178	174
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	120	130	0	108	193	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			250		292	185
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			250		292	185
tC, single (s)			4.1		6.9	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.0	3.3
p0 queue free %			100		68	78
cM capacity (veh/h)			1327		607	863

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	250	108	383
Volume Left	0	0	193
Volume Right	130	0	189
cSH	1700	1327	711
Volume to Capacity	0.15	0.00	0.54
Queue Length 95th (ft)	0	0	81
Control Delay (s)	0.0	0.0	15.8
Lane LOS			C
Approach Delay (s)	0.0	0.0	15.8
Approach LOS			C

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	0	58	0	0	58	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	63	0	0	63	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			63		32	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			63		32	32
tC, single (s)			4.1		7.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.4	3.3
p0 queue free %			100		92	100
cM capacity (veh/h)			1540		782	1042

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	63	0	63
Volume Left	0	0	63
Volume Right	63	0	0
cSH	1700	1700	782
Volume to Capacity	0.04	0.00	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.0	10.0
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.0
Approach LOS			B

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	13.6%	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)	11	460	4	15	559	31	33	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			0.96	1.00		0.97	
Satd. Flow (prot)		1560			1653			1780	1538		1747	
Flt Permitted		0.99			0.99			0.73	1.00		0.79	
Satd. Flow (perm)		1540			1633			1348	1538		1420	
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	495	4	16	601	33	35	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	511	0	0	649	0	0	43	4	0	44	0
Heavy Vehicles (%)	7%	22%	7%	2%	15%	2%	2%	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)		28.8			28.8			5.9	5.9		5.9	
Effective Green, g (s)		29.3			29.3			6.4	6.4		6.4	
Actuated g/C Ratio		0.67			0.67			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)		1033			1095			197	225		208	
v/s Ratio Prot												
v/s Ratio Perm		0.33			c0.40			c0.03	0.00		0.03	
v/c Ratio		0.49			0.59			0.22	0.02		0.21	
Uniform Delay, d1		3.5			3.9			16.4	16.0		16.4	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.4			0.9			0.6	0.0		0.5	
Delay (s)		3.9			4.8			17.0	16.0		16.9	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.9			4.8			16.6			16.9	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	43.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	130	266	19	131
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	148	302	22	149
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		801	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					598	
vCu, unblocked vol			220		801	203
tC, single (s)			5.1		6.5	7.2
tC, 2 stage (s)					5.5	
tF (s)			3.1		3.6	4.2
p0 queue free %			84		95	77
cM capacity (veh/h)			942		423	647

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	148	302	170
Volume Left	0	0	148	0	22
Volume Right	0	17	0	0	149
cSH	1700	1700	942	1700	607
Volume to Capacity	0.12	0.01	0.16	0.18	0.28
Queue Length 95th (ft)	0	0	14	0	29
Control Delay (s)	0.0	0.0	9.5	0.0	13.2
Lane LOS			A		B
Approach Delay (s)	0.0		3.1		13.2
Approach LOS					B

Intersection Summary			
Average Delay	4.4		
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 (vph)	119	1323	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)		3345						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3345						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	1423	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	1563	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)		2623						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.47									c0.03	
v/c Ratio		0.60						0.19			0.33	
Uniform Delay, d1		3.1						28.8			29.3	
Progression Factor		1.00						1.00			0.59	
Incremental Delay, d2		1.0						0.3			0.6	
Delay (s)		4.1						29.1			17.9	
Level of Service		A						C			B	
Approach Delay (s)		4.1			0.0			29.1			17.9	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.1	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	54.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1335	71	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			0.65	
Satd. Flow (perm)		3335						1711			1086	
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	1571	84	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	16	0	0	0	0
Lane Group Flow (vph)	0	1669	0	0	0	0	0	220	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)		37.6						15.3			15.3	
Effective Green, g (s)		37.6						15.3			15.3	
Actuated g/C Ratio		0.62						0.25			0.25	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		2059						430			273	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.50									c0.17	
v/c Ratio		0.81						0.51			0.68	
Uniform Delay, d1		8.9						19.6			20.6	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.5						1.0			6.9	
Delay (s)		11.4						20.6			27.6	
Level of Service		B						C			C	
Approach Delay (s)		11.4			0.0			20.6			27.6	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1329	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)		3353						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3353						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	1370	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	1411	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)		34.7						4.5			4.5	
Effective Green, g (s)		35.2						5.0			5.0	
Actuated g/C Ratio		0.73						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)		2449						166			141	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.42									c0.04	
v/c Ratio		0.58						0.17			0.39	
Uniform Delay, d1		3.0						19.7			20.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.3						0.5			1.8	
Delay (s)		3.4						20.2			22.0	
Level of Service		A						C			C	
Approach Delay (s)		3.4			0.0			20.2			22.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	48.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.1%	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)	52	1353	26	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)	54	1395	27	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			1422			1539	1515	711	858	1529	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1422			1539	1515	711	858	1529	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	72	90	74	59	100
cM capacity (veh/h)	1607			475			52	113	373	175	114	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	751	724	69	92
Volume Left	54	0	0	45
Volume Right	0	27	37	0
cSH	1607	1700	181	138
Volume to Capacity	0.03	0.43	0.38	0.67
Queue Length 95th (ft)	3	0	41	91
Control Delay (s)	0.9	0.0	36.6	71.9
Lane LOS	A		E	F
Approach Delay (s)	0.5		36.6	71.9
Approach LOS			E	F

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	1033	12	0	0	0	0	485	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	3356						3032				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3356						3032				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	1123	13	0	0	0	0	527	9	0	0	0
RTOR Reduction (vph)	51	1	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	57	1135	0	0	0	0	0	535	0	0	0	0
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	4%	19%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	25.2	25.2						14.5				
Effective Green, g (s)	26.2	26.2						15.5				
Actuated g/C Ratio	0.53	0.53						0.31				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	924	1769						946				
v/s Ratio Prot		c0.34						c0.18				
v/s Ratio Perm	0.03											
v/c Ratio	0.06	0.64						0.57				
Uniform Delay, d1	5.7	8.4						14.3				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.8						0.8				
Delay (s)	5.8	9.2						15.1				
Level of Service	A	A						B				
Approach Delay (s)		8.9			0.0			15.1			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	49.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.4%	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	1204	70	0	0	0	0	27	345	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					0.87	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2764	1300					1555	1519		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.67	
Satd. Flow (perm)		2764	1300					1555	1519		1248	
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	1295	75	0	0	0	0	29	371	44	34	0
RTOR Reduction (vph)	0	0	10	0	0	0	0	30	30	0	0	0
Lane Group Flow (vph)	0	1313	65	0	0	0	0	173	167	0	78	0
Heavy Vehicles (%)	6%	11%	6%	2%	2%	2%	2%	2%	1%	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)		47.9	47.9					13.1	13.1		13.1	
Effective Green, g (s)		48.4	48.4					13.6	13.6		13.6	
Actuated g/C Ratio		0.69	0.69					0.19	0.19		0.19	
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)		1911	899					302	295		242	
v/s Ratio Prot		c0.47						c0.11				
v/s Ratio Perm			0.05						0.11		0.06	
v/c Ratio		0.69	0.07					0.57	0.57		0.32	
Uniform Delay, d1		6.3	3.5					25.6	25.5		24.2	
Progression Factor		0.39	0.38					1.00	1.00		1.00	
Incremental Delay, d2		1.7	0.1					2.6	2.5		0.8	
Delay (s)		4.2	1.5					28.2	28.0		25.0	
Level of Service		A	A					C	C		C	
Approach Delay (s)		4.1			0.0			28.1			25.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	10.1	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	63.0%	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)	23	1175	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)		2759						1314			1462	
Flt Permitted		1.00						1.00			0.88	
Satd. Flow (perm)		2759						1314			1306	
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	1237	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	38	0	0	0	0
Lane Group Flow (vph)	0	1285	0	0	0	0	0	66	0	0	18	0
Heavy Vehicles (%)	6%	11%	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)		54.0						8.0			8.0	
Effective Green, g (s)		54.0						8.0			8.0	
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)		2128						150			149	
v/s Ratio Prot								c0.05				
v/s Ratio Perm		0.47									0.01	
v/c Ratio		0.60						0.44			0.12	
Uniform Delay, d1		3.4						28.9			27.8	
Progression Factor		0.45						1.00			1.00	
Incremental Delay, d2		0.7						2.1			0.4	
Delay (s)		2.2						31.0			28.2	
Level of Service		A						C			C	
Approach Delay (s)		2.2			0.0			31.0			28.2	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.7	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	47.3%	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	1034	16	0	0	0	0	0	29	289	204	0
Ideal Flow (vphpl)	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)		2736							1289	1681	1403	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2736							1289	1681	1403	
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	1088	17	0	0	0	0	0	31	304	215	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	170	12	0
Lane Group Flow (vph)	0	1103	0	0	0	0	0	0	4	85	252	0
Heavy Vehicles (%)	6%	12%	6%	2%	2%	2%	2%	1%	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)		29.5							9.5	17.5	17.5	
Effective Green, g (s)		30.0							10.0	18.0	18.0	
Actuated g/C Ratio		0.43							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)		1173							184	432	361	
v/s Ratio Prot		c0.40							c0.00	0.05	c0.18	
v/s Ratio Perm												
v/c Ratio		0.94							0.02	0.20	0.70	
Uniform Delay, d1		19.1							25.8	20.3	23.5	
Progression Factor		1.13							1.00	1.00	1.00	
Incremental Delay, d2		14.1							0.2	1.0	10.7	
Delay (s)		35.7							26.0	21.4	34.2	
Level of Service		D							C	C	C	
Approach Delay (s)		35.7			0.0			26.0			27.9	
Approach LOS		D			A			C			C	

Intersection Summary			
HCM Average Control Delay	33.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	511	12	0	0	0	0	68	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						0.96		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2578						1446		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2578						1446		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	544	13	0	0	0	0	72	27	489	50	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	0	562	0	0	0	0	0	79	0	269	270	0
Heavy Vehicles (%)	6%	19%	6%	2%	2%	2%	2%	1%	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)		24.0						7.6		24.9	24.9	
Effective Green, g (s)		24.5						8.1		25.4	25.4	
Actuated g/C Ratio		0.35						0.12		0.36	0.36	
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)		902						167		610	493	
v/s Ratio Prot								c0.05		0.16	c0.20	
v/s Ratio Perm		0.22										
v/c Ratio		0.62						0.47		0.44	0.55	
Uniform Delay, d1		18.9						28.9		16.9	17.7	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.3						2.1		2.3	4.3	
Delay (s)		20.3						31.1		19.2	22.1	
Level of Service		C						C		B	C	
Approach Delay (s)		20.3			0.0			31.1			20.6	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.0%	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	437	0	626	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)		1552		1906		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1552		1906		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	486	0	696	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	486	0	696	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	20%	2%	13%	3%	3%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		33.2		33.2		
Effective Green, g (s)		33.2		33.2		
Actuated g/C Ratio		0.77		0.77		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1193		1465		
v/s Ratio Prot		0.31		c0.37		
v/s Ratio Perm						
v/c Ratio		0.41		0.48		
Uniform Delay, d1		1.7		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.2		0.2		
Delay (s)		1.9		2.1		
Level of Service		A		A		
Approach Delay (s)	1.9			2.1	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	2.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	43.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	43.6%	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	882	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	919	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	82	0
Lane Group Flow (vph)	0	0	0	0	955	0	0	189	0	0	265	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)					49.2			11.8			11.8	
Effective Green, g (s)					49.7			12.3			12.3	
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)					2478			534			526	
v/s Ratio Prot											c0.09	
v/s Ratio Perm					0.27			0.06				
v/c Ratio					0.39			0.35			0.50	
Uniform Delay, d1					4.1			25.4			26.1	
Progression Factor					1.18			1.03			1.00	
Incremental Delay, d2					0.4			0.4			0.8	
Delay (s)					5.2			26.5			26.9	
Level of Service					A			C			C	
Approach Delay (s)		0.0			5.2			26.5			26.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.9	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	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)	0	0	0	14	1184	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	1260	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	52
Lane Group Flow (vph)	0	0	0	0	1293	0	0	419	0	0	54	238
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	0.54
Uniform Delay, d1					8.5			24.8			19.2	21.8
Progression Factor					0.63			1.00			1.00	1.00
Incremental Delay, d2					1.4			26.1			0.5	4.8
Delay (s)					6.7			50.8			19.7	26.6
Level of Service					A			D			B	C
Approach Delay (s)		0.0			6.7			50.8			25.5	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	18.8	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	81.4%	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)	0	0	0	44	1120	92	32	80	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		0.99			1.00	
Satd. Flow (prot)					3567	1554		1818			1794	
Flt Permitted					1.00	1.00		0.85			1.00	
Satd. Flow (perm)					3567	1554		1575			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	84	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	118	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)					28.9	28.9		14.7			14.7	
Effective Green, g (s)					28.9	28.9		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)					1998	870		449			511	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.34	0.03		0.07				
v/c Ratio					0.61	0.06		0.26			0.59	
Uniform Delay, d1					7.6	5.2		14.3			15.8	
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		14.6			17.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.0			14.6			17.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	51.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	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	18	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	20	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	1396	1386	650
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1300			0			758	1392	0	1396	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	86	100	100	86	97
cM capacity (veh/h)	529			1622			251	138	1084	89	140	417

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	690	657	77	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	207	188
Volume to Capacity	0.03	0.39	0.37	0.17
Queue Length 95th (ft)	2	0	40	15
Control Delay (s)	0.8	0.0	32.3	28.1
Lane LOS	A		D	D
Approach Delay (s)	0.4		32.3	28.1
Approach LOS			D	D

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1159	2	546	18	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		1441	1458				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3361		1441	1458				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	613	20	0	0	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	154	154	0	0	0	8
Lane Group Flow (vph)	0	0	0	0	1304	0	165	160	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	19%	7%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					27.8		11.7	11.7				0.7
Effective Green, g (s)					28.8		12.7	12.7				1.7
Actuated g/C Ratio					0.52		0.23	0.23				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)					1754		332	335				50
v/s Ratio Prot					c0.39							
v/s Ratio Perm							c0.11	0.11				c0.00
v/c Ratio					0.74		0.50	0.48				0.00
Uniform Delay, d1					10.3		18.5	18.4				25.9
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					1.7		1.2	1.1				0.0
Delay (s)					12.1		19.6	19.5				26.0
Level of Service					B		B	B				C
Approach Delay (s)		0.0			12.1			19.6			26.0	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	55.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.4%	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	1304	177	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	1373	186	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	1373				1373	686
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1373				1373	686
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)	496				134	385

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	686	686	186	89
Volume Left	0	0	0	0
Volume Right	0	0	186	89
cSH	1700	1700	1700	385
Volume to Capacity	0.40	0.40	0.11	0.23
Queue Length 95th (ft)	0	0	0	22
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	0.9		
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	462	1159	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)	476	1195	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			476	476	476	1671	1671	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			476	476	476	1671	1671	
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)			488	589	499	96	384	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	875	797	8	101
Volume Left	0	0	8	0
Volume Right	398	797	0	0
cSH	1700	1700	499	96
Volume to Capacity	0.51	0.47	0.02	1.05
Queue Length 95th (ft)	0	0	1	162
Control Delay (s)	0.0	0.0	12.3	188.7
Lane LOS			B	F
Approach Delay (s)	0.0		175.4	
Approach LOS			F	

Intersection Summary			
Average Delay	10.8		
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	75	0	0	1279	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)	1787			3343		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1787			3343		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	0	0	1390	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	82	0	0	1390	0	508
Heavy Vehicles (%)	1%	2%	12%	8%	3%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	15.9			52.2		77.1
Effective Green, g (s)	16.4			52.7		77.1
Actuated g/C Ratio	0.21			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	380			2285		2787
v/s Ratio Prot	c0.05			c0.42		
v/s Ratio Perm						c0.18
v/c Ratio	0.22			0.61		0.18
Uniform Delay, d1	25.0			6.6		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			1.1		0.1
Delay (s)	25.1			7.7		0.1
Level of Service	C			A		A
Approach Delay (s)	25.1			7.7	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	4.0
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	718	584	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)			1558	1845	3467	
Flt Permitted			0.37	1.00	1.00	
Satd. Flow (perm)			603	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	748	608	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	748	608	518	0
Heavy Vehicles (%)	2%	2%	12%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			57.2	61.7	25.8	
Effective Green, g (s)			58.2	62.2	26.3	
Actuated g/C Ratio			0.75	0.81	0.34	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			850	1488	1183	
v/s Ratio Prot			c0.36	0.33	0.15	
v/s Ratio Perm			c0.30			
v/c Ratio			0.88	0.41	0.44	
Uniform Delay, d1			8.6	2.1	19.7	
Progression Factor			0.73	0.10	1.00	
Incremental Delay, d2			8.7	0.6	0.1	
Delay (s)			14.9	0.9	19.8	
Level of Service			B	A	B	
Approach Delay (s)	0.0			8.6	19.8	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	18.9
Intersection Capacity Utilization	60.5%	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)	1059	400	0	0	0	21	0	331	131	0	0	0
Ideal Flow (vphpl)	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		0.96				
Flt Protected	0.95	0.98				1.00		1.00				
Satd. Flow (prot)	1618	1483				1277		2561				
Flt Permitted	0.95	0.98				1.00		1.00				
Satd. Flow (perm)	1618	1483				1277		2561				
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)	1139	430	0	0	0	23	0	356	141	0	0	0
RTOR Reduction (vph)	262	31	0	0	0	23	0	57	0	0	0	0
Lane Group Flow (vph)	513	763	0	0	0	0	0	440	0	0	0	0
Heavy Vehicles (%)	6%	30%	2%	0%	45%	3%	5%	13%	19%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	38.6	38.6				2.0		17.4				
Effective Green, g (s)	39.1	39.1				1.0		17.9				
Actuated g/C Ratio	0.56	0.56				0.01		0.26				
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)	904	828				18		655				
v/s Ratio Prot								c0.17				
v/s Ratio Perm	0.32	0.51				c0.00						
v/c Ratio	0.57	0.92				0.02		0.67				
Uniform Delay, d1	10.0	14.1				34.0		23.4				
Progression Factor	0.68	0.20				1.00		1.00				
Incremental Delay, d2	0.8	6.9				0.1		2.7				
Delay (s)	7.6	9.7				34.2		26.1				
Level of Service	A	A				C		C				
Approach Delay (s)		8.7			34.2			26.1			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
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

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	21	0	0	328	18	33	1385	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)		1255			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	345	19	35	1458	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	361	0	0	1499	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	45%	5%	5%	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)		24.1			24.1			36.9				
Effective Green, g (s)		24.6			24.6			37.4				
Actuated g/C Ratio		0.35			0.35			0.53				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		441			464			2611				
v/s Ratio Prot					c0.27							
v/s Ratio Perm		0.03						0.31				
v/c Ratio		0.09			0.78			0.57				
Uniform Delay, d1		15.2			20.3			10.9				
Progression Factor		0.69			1.00			0.80				
Incremental Delay, d2		0.1			8.0			0.6				
Delay (s)		10.5			28.3			9.4				
Level of Service		B			C			A				
Approach Delay (s)		10.5			28.3			9.4			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	13.0	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	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)	90	144	0	0	82	114	52	1450	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		4521				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4521				
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	55	1526	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	25	0	9	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	71	0	1673	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	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		0.37				
v/c Ratio		0.78			0.22	0.18		0.59				
Uniform Delay, d1		24.3			20.6	20.4		7.5				
Progression Factor		0.96			1.00	1.00		1.77				
Incremental Delay, d2		11.3			0.3	0.2		0.8				
Delay (s)		34.7			20.9	20.7		14.2				
Level of Service		C			C	C		B				
Approach Delay (s)		34.7			20.8			14.2			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	17.2	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	58.5%	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	1446	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			4380				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4380				
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	1662	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	20	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	99	0	0	1743	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			0.32			0.56				
Uniform Delay, d1		26.5			25.4			4.7				
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	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	48.7%	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)	233	25	0	0	32	18	42	1631	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			4391				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			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)	248	27	0	0	34	19	45	1735	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	1800	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)		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			10.1				
Progression Factor		0.67			1.00			0.57				
Incremental Delay, d2		22.1			0.1			1.4				
Delay (s)		37.7			17.8			7.1				
Level of Service		D			B			A				
Approach Delay (s)		37.7			17.8			7.1			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	60.4%	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)	53	15	0	0	7	10	22	1603	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	1822	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	1864	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	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)		8.8			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						0.42				
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	48.8%	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

8/12/2009

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	1310	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	1456	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	1513	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			29.3						2.6	
Level of Service		C			C						A	
Approach Delay (s)		29.2			29.3			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	43.5%	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	145	35	24	56	0	0	0	0	8	1169	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			1468						4403	
Flt Permitted		1.00			0.88						1.00	
Satd. Flow (perm)		1451			1305						4403	
Peak-hour factor, PHF	0.92	0.92	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	61	0	0	0	0	9	1271	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	87	0	0	0	0	0	1357	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			268						2994	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.07						0.31	
v/c Ratio		0.61			0.32						0.45	
Uniform Delay, d1		25.2			23.7						5.2	
Progression Factor		1.00			1.03						0.26	
Incremental Delay, d2		3.5			0.7						0.5	
Delay (s)		28.7			25.0						1.8	
Level of Service		C			C						A	
Approach Delay (s)		28.7			25.0			0.0			1.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.2	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	48.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1184	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	1287	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	1333	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			0.56						0.24	
Incremental Delay, d2		1.9			1.4						0.3	
Delay (s)		30.3			17.1						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.3			17.1			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	40.4%	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	104	15	57	72	0	0	0	0	131	1047	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			1823						4568	
Flt Permitted		1.00			0.84						0.99	
Satd. Flow (perm)		1831			1557						4568	
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	76	0	0	0	0	138	1102	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	136	0	0	0	0	0	1269	0
Heavy Vehicles (%)	2%	2%	2%	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)		536			456						2708	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.28	
v/c Ratio		0.22			0.30						0.47	
Uniform Delay, d1		18.7			19.2						8.0	
Progression Factor		1.00			0.95						0.86	
Incremental Delay, d2		0.9			1.6						0.6	
Delay (s)		19.6			19.8						7.4	
Level of Service		B			B						A	
Approach Delay (s)		19.6			19.8			0.0			7.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.5	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	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	28	321	0	0	0	0	21	337	773
Ideal Flow (vphpl)	1900	1900	1900	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					1.00						1.00	1.00
Satd. Flow (prot)					1074						2495	1400
Flt Permitted					1.00						1.00	1.00
Satd. Flow (perm)					1074						2495	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	341	0	0	0	0	22	359	822
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	210	210
Lane Group Flow (vph)	0	0	0	0	371	0	0	0	0	0	582	201
Heavy Vehicles (%)	2%	10%	10%	64%	39%	2%	2%	2%	2%	0%	13%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					27.4						33.6	33.6
Effective Green, g (s)					27.9						34.1	34.1
Actuated g/C Ratio					0.40						0.49	0.49
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					428						1215	682
v/s Ratio Prot												
v/s Ratio Perm					0.35						0.23	0.14
v/c Ratio					0.87						0.48	0.29
Uniform Delay, d1					19.3						12.0	10.7
Progression Factor					0.97						0.20	0.23
Incremental Delay, d2					13.8						1.2	1.0
Delay (s)					32.5						3.6	3.5
Level of Service					C						A	A
Approach Delay (s)		0.0			32.5			0.0			3.6	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.4	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	57.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1403	22	0	0	0	0	0	0	19	326	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)		2947									2594	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		2947									2594	
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	1613	25	0	0	0	0	0	0	22	375	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	1637	0	0	0	0	0	0	0	0	394	0
Heavy Vehicles (%)	5%	10%	10%	2%	2%	2%	2%	6%	4%	0%	19%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		40.0									21.0	
Effective Green, g (s)		40.5									21.5	
Actuated g/C Ratio		0.58									0.31	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1705									797	
v/s Ratio Prot		c0.56										
v/s Ratio Perm											0.15	
v/c Ratio		0.96									0.49	
Uniform Delay, d1		14.0									19.8	
Progression Factor		0.73									1.42	
Incremental Delay, d2		11.4									0.4	
Delay (s)		21.6									28.5	
Level of Service		C									C	
Approach Delay (s)		21.6			0.0			0.0			28.5	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM Average Control Delay	22.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
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)	118	657	0	0	0	0	0	1457	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	1534	418	0	0	0
RTOR Reduction (vph)	0	13	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	803	0	0	0	0	0	1534	381	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	3%	5%	4%	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						1.88	2.16			
Incremental Delay, d2		1.2						3.4	2.0			
Delay (s)		21.3						22.7	18.0			
Level of Service		C						C	B			
Approach Delay (s)		21.3			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	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	553	411	76	1403	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	1446	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	1519	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	5%	5%	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			15.0				
Progression Factor					1.00			0.76				
Incremental Delay, d2					8.1			8.8				
Delay (s)					29.7			20.2				
Level of Service					C			C				
Approach Delay (s)		0.0			29.7			20.2			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	24.0	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	76.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1114	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									4392	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4392	
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	1198	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	1535	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	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)		12.7									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									3062	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.35	
v/c Ratio		0.56									0.50	
Uniform Delay, d1		25.8									4.9	
Progression Factor		1.00									0.65	
Incremental Delay, d2		1.3									0.5	
Delay (s)		27.1									3.7	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			3.7	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.4%	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	324	296	0	0	0	0	0	1268	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	1378	68
RTOR Reduction (vph)	0	0	0	26	26	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	192	430	0	0	0	0	0	1440	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	1.26						1.00	
Incremental Delay, d2				1.9	0.3						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	76.1%	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	1234	36	28	1023	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	3342		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3126		1727	3342		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	1452	42	33	1204	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	1506	0	33	1206	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	8%	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	2314		261	259			90	
v/s Ratio Prot				0.02	c0.36		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.52		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.7		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.55		1.00	1.00			1.00	
Incremental Delay, d2		3.3		2.9	0.7		22.4	19.9			1.7	
Delay (s)		20.4		59.5	5.4		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.4			6.9			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	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1571	102	53	1075	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	3343		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	3343		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	1636	106	55	1120	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	1739	0	55	1120	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	16%	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	1907		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	0.93		0.50	0.59		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.8		53.3	16.4		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	8.4		2.5	1.3		21.0	2.2			2.1	
Delay (s)	42.3	22.6		55.9	17.7		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		22.9			19.5			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.4	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	65.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	969	3	516	909	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		2878	1491		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3176		2878	1491		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1196	4	637	1122	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1200	0	1198	561	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	16%	7%	16%	16%	2%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	39.7		41.8	93.5		41.8
Effective Green, g (s)	41.7		43.8	93.5		43.8
Actuated g/C Ratio	0.45		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)	1416		1348	1491		1244
v/s Ratio Prot	c0.38		c0.42	0.38		0.14
v/s Ratio Perm						
v/c Ratio	0.85		0.89	0.38		0.30
Uniform Delay, d1	23.1		22.6	0.0		15.4
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	4.8		7.5	0.7		0.1
Delay (s)	27.9		30.1	0.7		15.5
Level of Service	C		C	A		B
Approach Delay (s)	27.9		20.7		15.5	
Approach LOS	C		C		B	

Intersection Summary			
HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	93.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.7%	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	805	1	3	510	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	847	1	3	537	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	1475	1468	573	1454	1496	850	601			849		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1475	1468	573	1454	1496	850	601			849		
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	96	100	100	98	98			100		
cM capacity (veh/h)	99	124	519	102	119	363	975			788		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	855	3	595
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	519	363	975	975	788	1700
Volume to Capacity	0.04	0.02	0.02	0.02	0.00	0.35
Queue Length 95th (ft)	3	2	2	2	0	0
Control Delay (s)	12.2	15.2	8.8	0.4	9.6	0.0
Lane LOS	B	C	A	A	A	
Approach Delay (s)	12.2	15.2	0.6		0.1	
Approach LOS	B	C				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	47.6%	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	760	2	2	462	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	817	2	2	497	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	1369	1366	512	1361	1381	818	528			819		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1369	1366	512	1361	1381	818	528			819		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	78	99	98	100	98	99	99			100		
cM capacity (veh/h)	120	145	564	121	142	377	1044			809		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	819	2	528
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	156	243	1044	1700	809	1700
Volume to Capacity	0.24	0.03	0.01	0.48	0.00	0.31
Queue Length 95th (ft)	23	2	1	0	0	0
Control Delay (s)	35.3	20.2	8.5	0.0	9.5	0.0
Lane LOS	E	C	A		A	
Approach Delay (s)	35.3	20.2	0.2		0.0	
Approach LOS	E	C				

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
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	563	2	2	222	334
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	647	2	2	255	384
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1111	1106	447	916	1297	648	639			649		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1111	1106	447	916	1297	648	639			649		
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)	180	207	616	242	155	455	955			946		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	649	2	639
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	384
cSH	199	219	955	1700	946	1700
Volume to Capacity	0.13	0.05	0.00	0.38	0.00	0.38
Queue Length 95th (ft)	11	4	0	0	0	0
Control Delay (s)	25.7	22.3	8.8	0.0	8.8	0.0
Lane LOS	D	C	A		A	
Approach Delay (s)	25.7	22.3	0.0		0.0	
Approach LOS	D	C				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	540	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	568	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			600			718	584	584	628	600	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			600			718	584	584	628	600	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	42	99
cM capacity (veh/h)	1604			987			185	425	513	333	415	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	600	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	419	429
Volume to Capacity	0.00	0.00	0.21	0.60
Queue Length 95th (ft)	0	0	20	94
Control Delay (s)	0.0	0.0	15.9	25.0
Lane LOS			C	D
Approach Delay (s)	0.0	0.0	15.9	25.0
Approach LOS			C	D

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	503	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	541	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		1147	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1147	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		177	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	544	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	201
Volume to Capacity	0.35	0.00	0.05
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.0	0.1	24.0
Lane LOS		A	C
Approach Delay (s)	0.0	0.1	24.0
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	39.4%	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	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	574	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	586			601			1212	1208	603	1202	1203	581
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	586			601			1212	1208	603	1202	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			100	99	100	94	99	98
cM capacity (veh/h)	974			959			153	182	497	155	178	505

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	587	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	974	959	182	222
Volume to Capacity	0.01	0.00	0.01	0.08
Queue Length 95th (ft)	1	0	0	7
Control Delay (s)	0.2	0.1	24.9	22.7
Lane LOS	A	A	C	C
Approach Delay (s)	0.2	0.1	24.9	22.7
Approach LOS			C	C

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	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	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			602			1176	1176	602	1176	1176	569
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570			602			1176	1176	602	1176	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			99	100	100	99	100	100
cM capacity (veh/h)	988			961			168	193	500	168	191	522

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	603	571	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	988	961	251	254
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	19.5	19.3
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	19.5	19.3
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	39.9%	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	468	34	10	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	514	37	11	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			552			1212	1184	535	1184	1197	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			552			1212	1184	535	1184	1197	523
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
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 %	95			99			95	99	100	88	99	94
cM capacity (veh/h)	1021			984			142	179	548	155	174	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	602	537	11	54
Volume Left	51	11	7	19
Volume Right	37	12	2	34
cSH	1021	984	176	286
Volume to Capacity	0.05	0.01	0.06	0.19
Queue Length 95th (ft)	4	1	5	17
Control Delay (s)	1.3	0.3	26.9	20.5
Lane LOS	A	A	D	C
Approach Delay (s)	1.3	0.3	26.9	20.5
Approach LOS			D	C

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	487	0	0	27	488
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	530
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			589	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			589	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)			462	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	529	29	530
Volume Left	0	29	0
Volume Right	529	0	0
cSH	1700	1578	1700
Volume to Capacity	0.31	0.02	0.31
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.4	
Approach LOS			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	500	5	0	16	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	18	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	6.5	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	89	100	100
cM capacity (veh/h)	1585		149	164	168	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	366	189	18
Volume Left	366	183	0
Volume Right	0	5	0
cSH	1585	1585	164
Volume to Capacity	0.35	0.35	0.11
Queue Length 95th (ft)	39	39	9
Control Delay (s)	8.5	8.3	29.5
Lane LOS	A	A	D
Approach Delay (s)	8.4		29.5
Approach LOS			D

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	24.4%	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	492	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	559	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	411	609	0	599	598	291	0			582		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	411	609	0	599	598	291	0			582		
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 %	93	99	100	100	53	99	99			100		
cM capacity (veh/h)	331	409	1091	382	413	709	1600			988		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	293	302
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	339	420	1600	1700
Volume to Capacity	0.08	0.48	0.01	0.18
Queue Length 95th (ft)	7	63	1	0
Control Delay (s)	16.5	21.1	0.4	0.0
Lane LOS	C	C	A	
Approach Delay (s)	16.5	21.1	0.2	
Approach LOS	C	C		

Intersection Summary				
Average Delay		5.8		
Intersection Capacity Utilization		37.2%	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	506	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	527	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	284	543	2	545	540	266	0			532		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	284	543	2	545	540	266	0			532		
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 %	99	99	100	100	96	100	100			100		
cM capacity (veh/h)	629	448	1086	419	450	738	1593			1031		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	269	269
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	530	470	1593	1700
Volume to Capacity	0.03	0.04	0.00	0.16
Queue Length 95th (ft)	2	3	0	0
Control Delay (s)	12.0	13.0	0.2	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	13.0	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		0.8		
Intersection Capacity Utilization		27.9%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	19	470	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	22	547	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	382	605	4	603	601	281	3			557		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	382	605	4	603	601	281	3			557		
tC, single (s)	7.9	6.9	7.2	7.6	6.9	7.3	4.3			4.3		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.4	3.6	4.2	3.5	2.3			2.3		
p0 queue free %	97	98	100	100	72	99	99			100		
cM capacity (veh/h)	385	367	1034	362	369	663	1571			946		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	295	280
Volume Left	12	0	22	0
Volume Right	0	9	0	7
cSH	378	383	1571	1700
Volume to Capacity	0.05	0.30	0.01	0.16
Queue Length 95th (ft)	4	31	1	0
Control Delay (s)	15.0	18.3	0.7	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.0	18.3	0.3	
Approach LOS	C	C		

Intersection Summary				
Average Delay		3.6		
Intersection Capacity Utilization		31.5%	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	3	84	22	0	0	0	0	3	333	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	26	0	0	0	0	4	396	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	0.94	0.94	0.94	0.94	0.94		0.94					
vC, conflicting volume	424	418	206	223	423	7	409			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	269	263	38	56	268	7	253			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	4.1	3.4	2.2			2.3		
p0 queue free %	100	98	100	88	96	100	100			100		
cM capacity (veh/h)	567	572	927	840	586	1055	1232			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	126	202	208
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	619	771	1541	1700
Volume to Capacity	0.03	0.16	0.00	0.12
Queue Length 95th (ft)	2	15	0	0
Control Delay (s)	11.0	10.6	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.0	10.6	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.8		
Intersection Capacity Utilization		30.9%	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	394	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	424	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	461	453	220	245	459	4	437			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	461	453	220	245	459	4	437			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	98	100	100			99		
cM capacity (veh/h)	476	502	790	674	498	1080	1120			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	223	225
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	529	589	1576	1700
Volume to Capacity	0.03	0.05	0.01	0.13
Queue Length 95th (ft)	2	4	1	0
Control Delay (s)	12.0	11.4	0.4	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	11.4	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization		30.2%	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	349	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	371	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	440			0			455	434	222	232	468	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	440			0			455	434	222	232	468	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	94	100	81	91	100
cM capacity (veh/h)	1116			1565			456	514	788	667	489	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	199	255	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	520	611
Volume to Capacity	0.01	0.15	0.06	0.28
Queue Length 95th (ft)	1	0	5	29
Control Delay (s)	0.6	0.0	12.4	13.2
Lane LOS	A		B	B
Approach Delay (s)	0.3		12.4	13.2
Approach LOS			B	B

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	34.3%	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	0	0	0	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	0	0	0	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	49			29			70	78	49	70	70	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	49			29			70	78	49	70	70	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)	1571			1584			922	658	1020	908	810	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	49	0	5
Volume Left	0	0	0	5
Volume Right	17	0	0	0
cSH	1571	1584	1700	908
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	0.0	9.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	9.0
Approach LOS			A	A

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	13.3%	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	44	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	48	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	61	48	49			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	48	49			
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)	944	1020	1571			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	49
Volume Left	1	1	0
Volume Right	1	0	1
cSH	981	1571	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

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	437	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	502	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	502			456			1092	1044	454	1052	1049	506
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	502			456			1092	1044	454	1052	1049	506
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			89	98	99	97	100	91
cM capacity (veh/h)	1017			1115			163	212	588	186	210	549

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	509	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	1017	1700	1115	1700	198	455
Volume to Capacity	0.04	0.27	0.00	0.30	0.14	0.12
Queue Length 95th (ft)	3	0	0	0	12	10
Control Delay (s)	8.7	0.0	8.2	0.0	26.0	14.0
Lane LOS	A		A		D	B
Approach Delay (s)	0.7		0.1		26.0	14.0
Approach LOS					D	B

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

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	388	98	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	422	107	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	528			372			943	964	366	960	916	475
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			372			943	964	366	960	916	475
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			96	94	94	73	98	95
cM capacity (veh/h)	999			1144			210	236	653	206	264	592

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	545	65	92
Volume Left	18	16	9	57
Volume Right	11	107	41	29
cSH	999	1144	385	265
Volume to Capacity	0.02	0.01	0.17	0.35
Queue Length 95th (ft)	1	1	15	38
Control Delay (s)	0.6	0.4	16.2	25.7
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	16.2	25.7
Approach LOS			C	D

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	49.8%	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	281	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	316	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	316			326			356	672	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	316			326			356	672	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	90	95	100	100	100
cM capacity (veh/h)	1217			596			591	371	716	485	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	316	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	316	33
cSH	1217	1700	596	1700	481
Volume to Capacity	0.01	0.19	0.01	0.19	0.14
Queue Length 95th (ft)	1	0	1	0	12
Control Delay (s)	8.0	0.0	11.1	0.0	13.7
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.2		13.7
Approach LOS					B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

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

8/12/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	240	0	37	0	0	0	31	228	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)	282	0	44	0	0	0	36	268	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			44		605	608	0	873	586	22
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			44		605	608	0	873	586	22
tC, single (s)	4.7			4.1		7.6	6.5	6.9	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.8			2.2		4.0	4.0	3.9	3.5	4.0	3.3
p0 queue free %	78			100		100	89	71	98	89	100
cM capacity (veh/h)	1305			1565		265	318	924	148	333	1061

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	326	0	305	40
Volume Left	282	0	0	2
Volume Right	44	0	268	0
cSH	1305	1700	753	310
Volume to Capacity	0.22	0.00	0.40	0.13
Queue Length 95th (ft)	21	0	49	11
Control Delay (s)	7.6	0.0	13.0	18.3
Lane LOS	A		B	C
Approach Delay (s)	7.6	0.0	13.0	18.3
Approach LOS			B	C

Intersection Summary			
Average Delay	10.7		
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	110	120	0	99	178	174
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	120	130	0	108	193	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			250		292	185
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			250		292	185
tC, single (s)			4.1		6.9	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.0	3.3
p0 queue free %			100		68	78
cM capacity (veh/h)			1327		607	863

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	250	108	383
Volume Left	0	0	193
Volume Right	130	0	189
cSH	1700	1327	711
Volume to Capacity	0.15	0.00	0.54
Queue Length 95th (ft)	0	0	81
Control Delay (s)	0.0	0.0	15.8
Lane LOS			C
Approach Delay (s)	0.0	0.0	15.8
Approach LOS			C

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	0	58	0	0	58	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	63	0	0	63	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			63		32	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			63		32	32
tC, single (s)			4.1		7.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.4	3.3
p0 queue free %			100		92	100
cM capacity (veh/h)			1540		782	1042

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	63	0	63
Volume Left	0	0	63
Volume Right	63	0	0
cSH	1700	1700	782
Volume to Capacity	0.04	0.00	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.0	10.0
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.0
Approach LOS			B

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	13.6%	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)	11	510	4	15	609	31	33	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			0.96	1.00		0.97	
Satd. Flow (prot)		1500			1601			1780	1538		1747	
Flt Permitted		0.99			0.99			0.73	1.00		0.79	
Satd. Flow (perm)		1481			1582			1348	1538		1420	
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	548	4	16	655	33	35	8	26	34	8	14
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	23	0	12	0
Lane Group Flow (vph)	0	564	0	0	703	0	0	43	3	0	44	0
Heavy Vehicles (%)	7%	27%	7%	2%	19%	2%	2%	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)		34.2			34.2			6.0	6.0		6.0	
Effective Green, g (s)		34.7			34.7			6.5	6.5		6.5	
Actuated g/C Ratio		0.71			0.71			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)		1045			1116			178	203		188	
v/s Ratio Prot												
v/s Ratio Perm		0.38			c0.44			c0.03	0.00		0.03	
v/c Ratio		0.54			0.63			0.24	0.02		0.23	
Uniform Delay, d1		3.4			3.8			19.1	18.6		19.1	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.5			1.1			0.7	0.0		0.6	
Delay (s)		4.0			5.0			19.8	18.6		19.8	
Level of Service		A			A			B	B		B	
Approach Delay (s)		4.0			5.0			19.4			19.8	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	49.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	180	266	19	181
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	205	302	22	206
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		915	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					711	
vCu, unblocked vol			220		915	203
tC, single (s)			5.1		6.5	7.2
tC, 2 stage (s)					5.5	
tF (s)			3.1		3.6	4.2
p0 queue free %			78		94	68
cM capacity (veh/h)			939		349	646

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	205	302	227
Volume Left	0	0	205	0	22
Volume Right	0	17	0	0	206
cSH	1700	1700	939	1700	598
Volume to Capacity	0.12	0.01	0.22	0.18	0.38
Queue Length 95th (ft)	0	0	21	0	44
Control Delay (s)	0.0	0.0	9.9	0.0	14.7
Lane LOS			A		B
Approach Delay (s)	0.0		4.0		14.7
Approach LOS					B

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	41.6%	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)	119	1501	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)		3175						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3175						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	1614	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	1754	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	8%	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)		2490						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.55									c0.03	
v/c Ratio		0.70						0.19			0.33	
Uniform Delay, d1		3.6						28.8			29.3	
Progression Factor		1.00						1.00			0.54	
Incremental Delay, d2		1.7						0.3			0.6	
Delay (s)		5.3						29.1			16.3	
Level of Service		A						C			B	
Approach Delay (s)		5.3			0.0			29.1			16.3	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1513	71	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)		3162						1711			1621	
Flt Permitted		1.00						1.00			0.57	
Satd. Flow (perm)		3162						1711			954	
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	1780	84	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	1879	0	0	0	0	0	227	0	0	187	0
Heavy Vehicles (%)	2%	8%	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)		45.5						15.5			15.5	
Effective Green, g (s)		45.5						15.5			15.5	
Actuated g/C Ratio		0.66						0.22			0.22	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		2085						384			214	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.59									c0.20	
v/c Ratio		0.90						0.59			0.87	
Uniform Delay, d1		9.9						23.9			25.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		5.8						2.4			30.1	
Delay (s)		15.7						26.3			55.9	
Level of Service		B						C			E	
Approach Delay (s)		15.7			0.0			26.3			55.9	
Approach LOS		B			A			C			E	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1507	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)		3172						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3172						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	1554	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1595	0	0	0	0	0	28	0	0	55	0
Heavy Vehicles (%)	2%	8%	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)		41.2						4.6			4.6	
Effective Green, g (s)		41.7						5.1			5.1	
Actuated g/C Ratio		0.76						0.09			0.09	
Clearance Time (s)		4.5						4.5			4.5	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2414						149			126	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.50									c0.04	
v/c Ratio		0.66						0.19			0.44	
Uniform Delay, d1		3.1						22.9			23.5	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.7						0.6			2.4	
Delay (s)		3.8						23.6			25.9	
Level of Service		A						C			C	
Approach Delay (s)		3.8			0.0			23.6			25.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	52	1531	26	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)	54	1578	27	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			1605			1722	1699	803	949	1712	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1605			1722	1699	803	949	1712	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	63	89	66	47	100
cM capacity (veh/h)	1607			403			32	87	325	135	88	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	843	816	69	92
Volume Left	54	0	0	45
Volume Right	0	27	37	0
cSH	1607	1700	144	107
Volume to Capacity	0.03	0.48	0.48	0.86
Queue Length 95th (ft)	3	0	56	125
Control Delay (s)	0.9	0.0	51.3	126.3
Lane LOS	A		F	F
Approach Delay (s)	0.5		51.3	126.3
Approach LOS			F	F

Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	1211	12	0	0	0	0	357	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	3115						3459				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3115						3459				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	1316	13	0	0	0	0	388	9	0	0	0
RTOR Reduction (vph)	45	1	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	63	1328	0	0	0	0	0	395	0	0	0	0
Heavy Vehicles (%)	3%	10%	3%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	28.5	28.5						11.8				
Effective Green, g (s)	29.5	29.5						12.8				
Actuated g/C Ratio	0.59	0.59						0.25				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	1028	1827						880				
v/s Ratio Prot		c0.43						c0.11				
v/s Ratio Perm	0.04											
v/c Ratio	0.06	0.73						0.45				
Uniform Delay, d1	4.5	7.5						15.8				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	1.5						0.4				
Delay (s)	4.5	9.0						16.1				
Level of Service	A	A						B				
Approach Delay (s)		8.6			0.0			16.1			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	50.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.7%	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)	17	1254	70	0	0	0	0	27	345	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					0.87	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2716	1300					1555	1519		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.68	
Satd. Flow (perm)		2716	1300					1555	1519		1264	
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	1348	75	0	0	0	0	29	371	44	34	0
RTOR Reduction (vph)	0	0	10	0	0	0	0	26	26	0	0	0
Lane Group Flow (vph)	0	1366	65	0	0	0	0	177	171	0	78	0
Heavy Vehicles (%)	6%	13%	6%	2%	2%	2%	2%	2%	1%	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)		47.7	47.7					13.3	13.3		13.3	
Effective Green, g (s)		48.2	48.2					13.8	13.8		13.8	
Actuated g/C Ratio		0.69	0.69					0.20	0.20		0.20	
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)		1870	895					307	299		249	
v/s Ratio Prot		c0.50						c0.11				
v/s Ratio Perm			0.05						0.11		0.06	
v/c Ratio		0.73	0.07					0.58	0.57		0.31	
Uniform Delay, d1		6.8	3.6					25.5	25.4		24.0	
Progression Factor		0.43	0.43					1.00	1.00		1.00	
Incremental Delay, d2		2.1	0.1					2.6	2.6		0.7	
Delay (s)		5.0	1.7					28.1	28.1		24.8	
Level of Service		A	A					C	C		C	
Approach Delay (s)		4.9			0.0			28.1			24.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	10.5	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	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	23	1225	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)		2712						1314			1462	
Flt Permitted		1.00						1.00			0.88	
Satd. Flow (perm)		2712						1314			1309	
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	1289	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	33	0	0	0	0
Lane Group Flow (vph)	0	1337	0	0	0	0	0	71	0	0	18	0
Heavy Vehicles (%)	6%	13%	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)		53.8						8.2			8.2	
Effective Green, g (s)		53.8						8.2			8.2	
Actuated g/C Ratio		0.77						0.12			0.12	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		3.0						3.0			3.0	
Lane Grp Cap (vph)		2084						154			153	
v/s Ratio Prot								c0.05				
v/s Ratio Perm		0.49									0.01	
v/c Ratio		0.64						0.46			0.12	
Uniform Delay, d1		3.7						28.8			27.7	
Progression Factor		0.58						1.00			1.00	
Incremental Delay, d2		0.7						2.2			0.3	
Delay (s)		2.8						31.0			28.0	
Level of Service		A						C			C	
Approach Delay (s)		2.8			0.0			31.0			28.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1084	16	0	0	0	0	0	29	289	204	0
Ideal Flow (vphpl)	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)		2689							1289	1681	1403	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2689							1289	1681	1403	
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	1141	17	0	0	0	0	0	31	304	215	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	166	12	0
Lane Group Flow (vph)	0	1156	0	0	0	0	0	0	4	89	252	0
Heavy Vehicles (%)	6%	14%	6%	2%	2%	2%	2%	1%	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)		29.5							9.5	17.5	17.5	
Effective Green, g (s)		30.0							10.0	18.0	18.0	
Actuated g/C Ratio		0.43							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)		1152							184	432	361	
v/s Ratio Prot		c0.43							c0.00	0.05	c0.18	
v/s Ratio Perm												
v/c Ratio		1.00							0.02	0.21	0.70	
Uniform Delay, d1		20.0							25.8	20.4	23.5	
Progression Factor		1.14							1.00	1.00	1.00	
Incremental Delay, d2		25.7							0.2	1.1	10.7	
Delay (s)		48.5							26.0	21.5	34.2	
Level of Service		D							C	C	C	
Approach Delay (s)		48.5			0.0			26.0			28.0	
Approach LOS		D			A			C			C	

Intersection Summary			
HCM Average Control Delay	41.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.2%	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)	7	561	12	0	0	0	0	68	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						0.96		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2477						1446		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2477						1446		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	597	13	0	0	0	0	72	27	489	50	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	0	615	0	0	0	0	0	79	0	269	270	0
Heavy Vehicles (%)	6%	24%	6%	2%	2%	2%	2%	1%	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)		26.3						7.6		22.6	22.6	
Effective Green, g (s)		26.8						8.1		23.1	23.1	
Actuated g/C Ratio		0.38						0.12		0.33	0.33	
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)		948						167		555	449	
v/s Ratio Prot								c0.05		0.16	c0.20	
v/s Ratio Perm		0.25										
v/c Ratio		0.65						0.47		0.48	0.60	
Uniform Delay, d1		17.7						28.9		18.7	19.6	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.5						2.1		3.0	5.9	
Delay (s)		19.3						30.9		21.7	25.5	
Level of Service		B						C		C	C	
Approach Delay (s)		19.3			0.0			30.9			23.6	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.4%	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	487	0	676	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)		1490		1840		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1490		1840		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	541	0	751	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	541	0	751	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	25%	2%	17%	3%	3%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		34.8		34.8		
Effective Green, g (s)		34.8		34.8		
Actuated g/C Ratio		0.78		0.78		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1157		1429		
v/s Ratio Prot		0.36		c0.41		
v/s Ratio Perm						
v/c Ratio		0.47		0.53		
Uniform Delay, d1		1.8		1.9		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.3		0.4		
Delay (s)		2.1		2.2		
Level of Service		A		A		
Approach Delay (s)	2.1			2.2	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	2.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	44.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	13	1060	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)					3220			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3220			3047			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	1104	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	48	0
Lane Group Flow (vph)	0	0	0	0	1140	0	0	189	0	0	299	0
Heavy Vehicles (%)	2%	2%	2%	3%	12%	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)					48.3			12.7			12.7	
Effective Green, g (s)					48.8			13.2			13.2	
Actuated g/C Ratio					0.70			0.19			0.19	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2245			575			565	
v/s Ratio Prot											c0.10	
v/s Ratio Perm					0.35			0.06				
v/c Ratio					0.51			0.33			0.53	
Uniform Delay, d1					5.0			24.6			25.6	
Progression Factor					1.09			1.01			1.00	
Incremental Delay, d2					0.7			0.3			0.9	
Delay (s)					6.1			25.1			26.5	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.1			25.1			26.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.6%	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)	0	0	0	14	1362	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)					3143			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3143			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	1449	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	34
Lane Group Flow (vph)	0	0	0	0	1482	0	0	419	0	0	54	256
Heavy Vehicles (%)	2%	2%	2%	2%	9%	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)					1931			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.47			c0.25				0.16
v/c Ratio					0.77			0.92			0.12	0.59
Uniform Delay, d1					9.9			24.8			19.2	22.1
Progression Factor					0.76			1.00			1.00	1.00
Incremental Delay, d2					2.8			26.1			0.5	5.6
Delay (s)					10.3			50.8			19.7	27.7
Level of Service					B			D			B	C
Approach Delay (s)		0.0			10.3			50.8			26.5	
Approach LOS		A			B			D			C	

Intersection Summary			
HCM Average Control Delay	20.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1298	92	32	80	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		0.99			1.00	
Satd. Flow (prot)					3343	1553		1818			1794	
Flt Permitted					1.00	1.00		0.82			1.00	
Satd. Flow (perm)					3343	1553		1519			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	1366	97	34	84	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1412	57	0	118	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	8%	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)					34.0	34.0		15.5			15.5	
Effective Green, g (s)					34.0	34.0		15.5			15.5	
Actuated g/C Ratio					0.59	0.59		0.27			0.27	
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)					1977	918		409			484	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.42	0.04		0.08				
v/c Ratio					0.71	0.06		0.29			0.62	
Uniform Delay, d1					8.3	5.0		16.6			18.4	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					1.2	0.0		0.4			2.3	
Delay (s)					9.6	5.0		17.0			20.7	
Level of Service					A	A		B			C	
Approach Delay (s)		0.0			9.3			17.0			20.7	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	57.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.4%	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)	0	0	0	33	1458	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)					3146			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3146			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	1551	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	1591	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	9%	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)					2379			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.51			c0.02				
v/c Ratio					0.67			0.35			0.29	
Uniform Delay, d1					2.4			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.7			2.8			2.0	
Delay (s)					3.1			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			3.1			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
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	1349	12	52	18	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	1482	13	57	20	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	1496			0			855	1588	0	1591	1581	748
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1496			0			855	1588	0	1591	1581	748
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			72	81	100	100	81	97
cM capacity (veh/h)	445			1622			204	105	1084	61	107	360

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	787	754	77	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	164	146
Volume to Capacity	0.03	0.44	0.47	0.22
Queue Length 95th (ft)	2	0	55	20
Control Delay (s)	0.8	0.0	44.9	36.5
Lane LOS	A		E	E
Approach Delay (s)	0.4		44.9	36.5
Approach LOS			E	E

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
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	1337	2	418	18	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)					3146		1603	1613				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3146		1603	1613				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	1502	2	470	20	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	1504	0	88	90	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	9%	2%	7%	7%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					34.7		9.0	9.0				0.8
Effective Green, g (s)					35.7		10.0	10.0				1.8
Actuated g/C Ratio					0.60		0.17	0.17				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)					1888		269	271				49
v/s Ratio Prot					c0.48							
v/s Ratio Perm							0.06	0.06				c0.00
v/c Ratio					0.80		0.33	0.33				0.00
Uniform Delay, d1					9.1		21.8	21.8				28.0
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					2.4		0.7	0.7				0.0
Delay (s)					11.5		22.5	22.5				28.0
Level of Service					B		C	C				C
Approach Delay (s)		0.0			11.5			22.5			28.0	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1354	177	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	1425	186	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	1425				1425	713
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1425				1425	713
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	76
cM capacity (veh/h)	473				124	370

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	713	713	186	89
Volume Left	0	0	0	0
Volume Right	0	0	186	89
cSH	1700	1700	1700	370
Volume to Capacity	0.42	0.42	0.11	0.24
Queue Length 95th (ft)	0	0	0	23
Control Delay (s)	0.0	0.0	0.0	17.8
Lane LOS				C
Approach Delay (s)	0.0			17.8
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	462	1209	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)	476	1246	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			476	476	476	1723	1723	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			476	476	476	1723	1723	
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)			488	589	499	89	367	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	892	831	8	101
Volume Left	0	0	8	0
Volume Right	415	831	0	0
cSH	1700	1700	499	89
Volume to Capacity	0.52	0.49	0.02	1.13
Queue Length 95th (ft)	0	0	1	174
Control Delay (s)	0.0	0.0	12.3	222.3
Lane LOS			B	F
Approach Delay (s)	0.0		206.4	
Approach LOS			F	

Intersection Summary			
Average Delay	12.3		
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	75	0	0	1329	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)	1787			3282		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1787			3282		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	0	0	1445	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	82	0	0	1445	0	508
Heavy Vehicles (%)	1%	2%	16%	10%	3%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	15.9			52.2		77.1
Effective Green, g (s)	16.4			52.7		77.1
Actuated g/C Ratio	0.21			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	380			2243		2787
v/s Ratio Prot	c0.05			c0.44		
v/s Ratio Perm						c0.18
v/c Ratio	0.22			0.64		0.18
Uniform Delay, d1	25.0			6.9		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			1.4		0.1
Delay (s)	25.1			8.3		0.1
Level of Service	C			A		A
Approach Delay (s)	25.1			8.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	4.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	768	584	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)			1504	1845	3467	
Flt Permitted			0.37	1.00	1.00	
Satd. Flow (perm)			582	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	800	608	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	800	608	518	0
Heavy Vehicles (%)	2%	2%	16%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			57.2	61.7	25.8	
Effective Green, g (s)			58.2	62.2	26.3	
Actuated g/C Ratio			0.75	0.81	0.34	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			821	1488	1183	
v/s Ratio Prot			c0.40	0.33	0.15	
v/s Ratio Perm			c0.33			
v/c Ratio			0.97	0.41	0.44	
Uniform Delay, d1			11.0	2.1	19.7	
Progression Factor			0.81	0.10	1.00	
Incremental Delay, d2			21.8	0.6	0.1	
Delay (s)			30.6	0.8	19.8	
Level of Service			C	A	B	
Approach Delay (s)	0.0			17.8	19.8	
Approach LOS	A			B	B	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	18.9
Intersection Capacity Utilization	63.3%	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

8/12/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	1059	350	0	0	0	21	0	331	131	0	0	0
Ideal Flow (vphpl)	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		0.96				
Flt Protected	0.95	0.98				1.00		1.00				
Satd. Flow (prot)	1618	1532				1277		2561				
Flt Permitted	0.95	0.98				1.00		1.00				
Satd. Flow (perm)	1618	1532				1277		2561				
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)	1139	376	0	0	0	23	0	356	141	0	0	0
RTOR Reduction (vph)	262	38	0	0	0	23	0	57	0	0	0	0
Lane Group Flow (vph)	490	725	0	0	0	0	0	440	0	0	0	0
Heavy Vehicles (%)	6%	24%	2%	0%	39%	3%	5%	13%	19%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	38.6	38.6				2.0		17.4				
Effective Green, g (s)	39.1	39.1				1.0		17.9				
Actuated g/C Ratio	0.56	0.56				0.01		0.26				
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)	904	856				18		655				
v/s Ratio Prot								c0.17				
v/s Ratio Perm	0.30	0.47				c0.00						
v/c Ratio	0.54	0.85				0.02		0.67				
Uniform Delay, d1	9.8	13.0				34.0		23.4				
Progression Factor	0.64	0.20				1.00		1.00				
Incremental Delay, d2	1.0	4.5				0.1		2.7				
Delay (s)	7.2	7.1				34.2		26.1				
Level of Service	A	A				C		C				
Approach Delay (s)		7.2			34.2			26.1			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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	278	18	33	1385	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			1376			4887				
Flt Permitted		0.84			1.00			1.00				
Satd. Flow (perm)		1263			1376			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	293	19	35	1458	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	308	0	0	1499	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	39%	5%	5%	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)		21.1			21.1			39.9				
Effective Green, g (s)		21.6			21.6			40.4				
Actuated g/C Ratio		0.31			0.31			0.58				
Clearance Time (s)		4.5			4.5			4.5				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		390			425			2820				
v/s Ratio Prot					c0.22							
v/s Ratio Perm		0.03						0.31				
v/c Ratio		0.10			0.72			0.53				
Uniform Delay, d1		17.3			21.5			9.0				
Progression Factor		0.70			1.00			0.78				
Incremental Delay, d2		0.1			6.0			0.5				
Delay (s)		12.3			27.6			7.6				
Level of Service		B			C			A				
Approach Delay (s)		12.3			27.6			7.6			0.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
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)	90	144	0	0	82	114	52	1450	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		4521				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1241			1712	1504		4521				
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	55	1526	101	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	25	0	9	0	0	0	0
Lane Group Flow (vph)	0	247	0	0	95	71	0	1673	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	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		0.37				
v/c Ratio		0.78			0.22	0.18		0.59				
Uniform Delay, d1		24.3			20.6	20.4		7.5				
Progression Factor		0.96			1.00	1.00		1.93				
Incremental Delay, d2		11.3			0.3	0.2		0.8				
Delay (s)		34.7			20.9	20.7		15.4				
Level of Service		C			C	C		B				
Approach Delay (s)		34.7			20.8			15.4			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	18.1	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	58.5%	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	1446	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			4380				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1322			1785			4380				
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	1662	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	20	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	123	0	0	99	0	0	1743	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			0.32			0.56				
Uniform Delay, d1		26.5			25.4			4.7				
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	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	48.7%	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)	233	25	0	0	32	18	42	1631	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			4391				
Flt Permitted		0.71			1.00			1.00				
Satd. Flow (perm)		1056			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)	248	27	0	0	34	19	45	1735	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	1800	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)		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			10.1				
Progression Factor		0.67			1.00			0.60				
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	60.4%	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)	53	15	0	0	7	10	22	1603	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	1822	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	1864	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	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)		8.8			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						0.42				
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	48.8%	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

8/12/2009

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	1310	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	1456	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	1513	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			29.3						2.6	
Level of Service		C			C						A	
Approach Delay (s)		29.2			29.3			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	43.5%	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	145	35	24	56	0	0	0	0	8	1169	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			1468						4403	
Flt Permitted		1.00			0.88						1.00	
Satd. Flow (perm)		1451			1305						4403	
Peak-hour factor, PHF	0.92	0.92	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	61	0	0	0	0	9	1271	84
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	181	0	0	87	0	0	0	0	0	1357	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			268						2994	
v/s Ratio Prot		c0.12										
v/s Ratio Perm					0.07						0.31	
v/c Ratio		0.61			0.32						0.45	
Uniform Delay, d1		25.2			23.7						5.2	
Progression Factor		1.00			1.03						0.26	
Incremental Delay, d2		3.5			0.7						0.5	
Delay (s)		28.7			25.0						1.8	
Level of Service		C			C						A	
Approach Delay (s)		28.7			25.0			0.0			1.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.2	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	48.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	75	20	16	45	0	0	0	0	19	1184	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	1287	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	1333	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			0.56						0.24	
Incremental Delay, d2		1.9			1.4						0.3	
Delay (s)		30.3			17.1						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.3			17.1			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	40.4%	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	104	15	57	72	0	0	0	0	131	1047	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			1823						4568	
Flt Permitted		1.00			0.84						0.99	
Satd. Flow (perm)		1831			1557						4568	
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	76	0	0	0	0	138	1102	33
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	117	0	0	136	0	0	0	0	0	1269	0
Heavy Vehicles (%)	2%	2%	2%	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)		536			456						2708	
v/s Ratio Prot		0.06										
v/s Ratio Perm					c0.09						0.28	
v/c Ratio		0.22			0.30						0.47	
Uniform Delay, d1		18.7			19.2						8.0	
Progression Factor		1.00			0.95						0.86	
Incremental Delay, d2		0.9			1.6						0.6	
Delay (s)		19.6			19.8						7.4	
Level of Service		B			B						A	
Approach Delay (s)		19.6			19.8			0.0			7.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.5	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	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	28	271	0	0	0	0	21	337	773
Ideal Flow (vphpl)	1900	1900	1900	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					1.00						1.00	1.00
Satd. Flow (prot)					1120						2495	1400
Flt Permitted					1.00						1.00	1.00
Satd. Flow (perm)					1120						2495	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	288	0	0	0	0	22	359	822
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	193	193
Lane Group Flow (vph)	0	0	0	0	318	0	0	0	0	0	599	218
Heavy Vehicles (%)	2%	8%	10%	64%	32%	2%	2%	2%	2%	0%	13%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					24.4						36.6	36.6
Effective Green, g (s)					24.9						37.1	37.1
Actuated g/C Ratio					0.36						0.53	0.53
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					398						1322	742
v/s Ratio Prot												
v/s Ratio Perm					0.28						0.24	0.16
v/c Ratio					0.80						0.45	0.29
Uniform Delay, d1					20.3						10.2	9.2
Progression Factor					0.93						0.22	0.24
Incremental Delay, d2					9.5						1.0	0.9
Delay (s)					28.5						3.3	3.1
Level of Service					C						A	A
Approach Delay (s)		0.0			28.5			0.0			3.2	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.5	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	54.4%	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	1353	22	0	0	0	0	0	0	19	326	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)		3000									2594	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3000									2594	
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	1555	25	0	0	0	0	0	0	22	375	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	1579	0	0	0	0	0	0	0	0	394	0
Heavy Vehicles (%)	5%	8%	10%	2%	2%	2%	2%	6%	4%	0%	19%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		40.0									21.0	
Effective Green, g (s)		40.5									21.5	
Actuated g/C Ratio		0.58									0.31	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1736									797	
v/s Ratio Prot		c0.53										
v/s Ratio Perm											0.15	
v/c Ratio		0.91									0.49	
Uniform Delay, d1		13.1									19.8	
Progression Factor		0.74									1.42	
Incremental Delay, d2		6.9									0.4	
Delay (s)		16.6									28.6	
Level of Service		B									C	
Approach Delay (s)		16.6			0.0			0.0			28.6	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	19.0	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	58.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	118	657	0	0	0	0	0	1457	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	1534	418	0	0	0
RTOR Reduction (vph)	0	13	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	0	803	0	0	0	0	0	1534	381	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	3%	5%	4%	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						1.88	2.16			
Incremental Delay, d2		1.2						3.4	2.0			
Delay (s)		21.3						22.7	18.0			
Level of Service		C						C	B			
Approach Delay (s)		21.3			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	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	553	411	76	1403	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	1446	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	1519	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	4%	4%	4%	5%	5%	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			15.0				
Progression Factor					1.00			0.76				
Incremental Delay, d2					8.1			8.8				
Delay (s)					29.7			20.2				
Level of Service					C			C				
Approach Delay (s)		0.0			29.7			20.2			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	24.0	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	76.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	270	42	0	0	0	0	0	0	366	1114	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									4392	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		2948									4392	
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	1198	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	1535	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	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)		12.7									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									3062	
v/s Ratio Prot		c0.11										
v/s Ratio Perm											0.35	
v/c Ratio		0.56									0.50	
Uniform Delay, d1		25.8									4.9	
Progression Factor		1.00									0.65	
Incremental Delay, d2		1.3									0.5	
Delay (s)		27.1									3.7	
Level of Service		C									A	
Approach Delay (s)		27.1			0.0			0.0			3.7	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.4%	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	324	296	0	0	0	0	0	1268	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	1378	68
RTOR Reduction (vph)	0	0	0	26	26	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	0	192	430	0	0	0	0	0	1440	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	1.26						1.00	
Incremental Delay, d2				1.9	0.3						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	76.1%	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	1234	36	28	1023	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	3342		1681	1672			1762	
Flt Permitted		0.94		0.95	1.00		0.95	0.96			0.97	
Satd. Flow (perm)		3126		1727	3342		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	1452	42	33	1204	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	1506	0	33	1206	0	222	216	0	0	25	0
Heavy Vehicles (%)	3%	8%	8%	8%	8%	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	2314		261	259			90	
v/s Ratio Prot				0.02	c0.36		c0.13	0.13			c0.01	
v/s Ratio Perm		c0.48										
v/c Ratio		0.79		0.42	0.52		0.85	0.83			0.28	
Uniform Delay, d1		17.1		54.8	8.7		48.5	48.4			53.9	
Progression Factor		1.00		1.03	0.55		1.00	1.00			1.00	
Incremental Delay, d2		3.3		2.9	0.7		22.4	19.9			1.7	
Delay (s)		20.4		59.5	5.4		70.9	68.3			55.6	
Level of Service		C		E	A		E	E			E	
Approach Delay (s)		20.4			6.9			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	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1571	102	53	1075	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	3343		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	3343		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	1636	106	55	1120	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	1739	0	55	1120	0	179	101	0	0	85	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%	13%	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	1907		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	0.93		0.50	0.59		0.82	0.50			0.46	
Uniform Delay, d1	53.4	23.8		53.3	16.4		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	8.4		2.5	1.3		21.0	2.2			2.1	
Delay (s)	42.3	22.6		55.9	17.7		70.9	49.8			51.6	
Level of Service	D	C		E	B		E	D			D	
Approach Delay (s)		22.9			19.5			60.7			51.6	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM Average Control Delay	26.4	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	65.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	919	3	516	859	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		2935	1517		2656
Flt Permitted	1.00		0.97	1.00		1.00
Satd. Flow (perm)	3260		2935	1517		2656
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	1135	4	637	1060	0	377
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1139	0	1156	541	0	377
Confl. Peds. (#/hr)		10	10			
Heavy Vehicles (%)	13%	7%	14%	14%	2%	7%
Turn Type				custom		Over
Protected Phases	2		4	Free		4
Permitted Phases						
Actuated Green, G (s)	36.9		39.6	88.5		39.6
Effective Green, g (s)	38.9		41.6	88.5		41.6
Actuated g/C Ratio	0.44		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)	1433		1380	1517		1248
v/s Ratio Prot	c0.35		c0.39	0.36		0.14
v/s Ratio Perm						
v/c Ratio	0.79		0.84	0.36		0.30
Uniform Delay, d1	21.4		20.5	0.0		14.5
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	3.0		4.5	0.7		0.1
Delay (s)	24.4		25.0	0.7		14.6
Level of Service	C		C	A		B
Approach Delay (s)	24.4		17.3		14.6	
Approach LOS	C		B		B	

Intersection Summary			
HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	88.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.7%	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	755	1	3	460	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	795	1	3	484	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	1370	1362	520	1349	1391	797	548			797		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1370	1362	520	1349	1391	797	548			797		
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	96	100	100	98	98			100		
cM capacity (veh/h)	118	144	556	121	138	389	1020			824		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	21	8	13	802	3	542
Volume Left	0	0	13	7	3	0
Volume Right	21	8	0	1	0	58
cSH	556	389	1020	1020	824	1700
Volume to Capacity	0.04	0.02	0.02	0.02	0.00	0.32
Queue Length 95th (ft)	3	2	1	1	0	0
Control Delay (s)	11.7	14.5	8.6	0.4	9.4	0.0
Lane LOS	B	B	A	A	A	
Approach Delay (s)	11.7	14.5	0.5		0.1	
Approach LOS	B	B				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	44.9%	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)	24	1	10	0	2	4	14	710	2	2	412	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	763	2	2	443	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	1262	1259	459	1253	1273	765	474			766		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1262	1259	459	1253	1273	765	474			766		
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 %	82	99	98	100	99	99	99			100		
cM capacity (veh/h)	143	169	604	144	165	405	1093			848		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	6	15	766	2	474
Volume Left	26	0	15	0	2	0
Volume Right	11	4	0	2	0	31
cSH	184	273	1093	1700	848	1700
Volume to Capacity	0.20	0.02	0.01	0.45	0.00	0.28
Queue Length 95th (ft)	19	2	1	0	0	0
Control Delay (s)	29.6	18.5	8.3	0.0	9.3	0.0
Lane LOS	D	C	A		A	
Approach Delay (s)	29.6	18.5	0.2		0.0	
Approach LOS	D	C				

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	52.8%	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	513	2	2	222	284
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	590	2	2	255	326
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1025	1020	418	859	1182	591	582			592		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1025	1020	418	859	1182	591	582			592		
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 %	89	100	99	100	97	99	100			100		
cM capacity (veh/h)	207	233	639	265	182	491	1003			994		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	25	10	2	592	2	582
Volume Left	22	0	2	0	2	0
Volume Right	3	5	0	2	0	326
cSH	228	252	1003	1700	994	1700
Volume to Capacity	0.11	0.04	0.00	0.35	0.00	0.34
Queue Length 95th (ft)	9	3	0	0	0	0
Control Delay (s)	22.7	19.9	8.6	0.0	8.6	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	22.7	19.9	0.0		0.0	
Approach LOS	C	C				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	43.6%	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)	0	490	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	516	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			547			666	532	532	576	547	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			547			666	532	532	576	547	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	46	99
cM capacity (veh/h)	1604			1032			212	455	550	365	444	1085

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	547	0	88	256
Volume Left	0	0	1	2
Volume Right	32	0	1	15
cSH	1604	1700	450	459
Volume to Capacity	0.00	0.00	0.20	0.56
Queue Length 95th (ft)	0	0	18	83
Control Delay (s)	0.0	0.0	15.0	22.3
Lane LOS			B	C
Approach Delay (s)	0.0	0.0	15.0	22.3
Approach LOS			B	C

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	557	1	3	503	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	541	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		1147	599
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1147	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		177	423

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	544	11
Volume Left	0	3	9
Volume Right	1	0	2
cSH	1700	948	201
Volume to Capacity	0.35	0.00	0.05
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.0	0.1	24.0
Lane LOS		A	C
Approach Delay (s)	0.0	0.1	24.0
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	39.4%	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	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	574	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	586			601			1212	1208	603	1202	1203	581
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	586			601			1212	1208	603	1202	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			100	99	100	94	99	98
cM capacity (veh/h)	974			959			153	182	497	155	178	505

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	607	587	1	18
Volume Left	9	2	0	9
Volume Right	0	11	0	8
cSH	974	959	182	222
Volume to Capacity	0.01	0.00	0.01	0.08
Queue Length 95th (ft)	1	0	0	7
Control Delay (s)	0.2	0.1	24.9	22.7
Lane LOS	A	A	C	C
Approach Delay (s)	0.2	0.1	24.9	22.7
Approach LOS			C	C

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	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	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			602			1176	1176	602	1176	1176	569
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570			602			1176	1176	602	1176	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			99	100	100	99	100	100
cM capacity (veh/h)	988			961			168	193	500	168	191	522

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	603	571	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	988	961	251	254
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	19.5	19.3
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	19.5	19.3
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	39.9%	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	468	34	10	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	514	37	11	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			552			1212	1184	535	1184	1197	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			552			1212	1184	535	1184	1197	523
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
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 %	95			99			95	99	100	88	99	94
cM capacity (veh/h)	1021			984			142	179	548	155	174	552

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	602	537	11	54
Volume Left	51	11	7	19
Volume Right	37	12	2	34
cSH	1021	984	176	286
Volume to Capacity	0.05	0.01	0.06	0.19
Queue Length 95th (ft)	4	1	5	17
Control Delay (s)	1.3	0.3	26.9	20.5
Lane LOS	A	A	D	C
Approach Delay (s)	1.3	0.3	26.9	20.5
Approach LOS			D	C

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	487	0	0	27	488
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	530
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			589	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			589	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)			462	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	529	29	530
Volume Left	0	29	0
Volume Right	529	0	0
cSH	1700	1578	1700
Volume to Capacity	0.31	0.02	0.31
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.4	
Approach LOS			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	500	5	0	16	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	18	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	6.5	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	89	100	100
cM capacity (veh/h)	1585		149	164	168	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	366	189	18
Volume Left	366	183	0
Volume Right	0	5	0
cSH	1585	1585	164
Volume to Capacity	0.35	0.35	0.11
Queue Length 95th (ft)	39	39	9
Control Delay (s)	8.5	8.3	29.5
Lane LOS	A	A	D
Approach Delay (s)	8.4		29.5
Approach LOS			D

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	24.4%	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	492	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	559	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	411	609	0	599	598	291	0			582		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	411	609	0	599	598	291	0			582		
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 %	93	99	100	100	53	99	99			100		
cM capacity (veh/h)	331	409	1091	382	413	709	1600			988		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	27	200	293	302
Volume Left	24	0	14	0
Volume Right	0	8	0	23
cSH	339	420	1600	1700
Volume to Capacity	0.08	0.48	0.01	0.18
Queue Length 95th (ft)	7	63	1	0
Control Delay (s)	16.5	21.1	0.4	0.0
Lane LOS	C	C	A	
Approach Delay (s)	16.5	21.1	0.2	
Approach LOS	C	C		

Intersection Summary				
Average Delay		5.8		
Intersection Capacity Utilization		37.2%	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	506	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	527	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	284	543	2	545	540	266	0			532		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	284	543	2	545	540	266	0			532		
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 %	99	99	100	100	96	100	100			100		
cM capacity (veh/h)	629	448	1086	419	450	738	1593			1031		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	14	19	269	269
Volume Left	7	0	5	0
Volume Right	0	2	0	5
cSH	530	470	1593	1700
Volume to Capacity	0.03	0.04	0.00	0.16
Queue Length 95th (ft)	2	3	0	0
Control Delay (s)	12.0	13.0	0.2	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	13.0	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		0.8		
Intersection Capacity Utilization		27.9%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	10	6	0	0	90	8	19	470	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	22	547	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	382	605	4	603	601	281	3			557		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	382	605	4	603	601	281	3			557		
tC, single (s)	7.9	6.9	7.2	7.6	6.9	7.3	4.3			4.3		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.4	3.6	4.2	3.5	2.3			2.3		
p0 queue free %	97	98	100	100	72	99	99			100		
cM capacity (veh/h)	385	367	1034	362	369	663	1571			946		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	114	295	280
Volume Left	12	0	22	0
Volume Right	0	9	0	7
cSH	378	383	1571	1700
Volume to Capacity	0.05	0.30	0.01	0.16
Queue Length 95th (ft)	4	31	1	0
Control Delay (s)	15.0	18.3	0.7	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.0	18.3	0.3	
Approach LOS	C	C		

Intersection Summary				
Average Delay		3.6		
Intersection Capacity Utilization		31.5%	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	3	84	22	0	0	0	0	3	333	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	26	0	0	0	0	4	396	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	0.94	0.94	0.94	0.94	0.94		0.94					
vC, conflicting volume	424	418	206	223	423	7	409			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	269	263	38	56	268	7	253			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	4.1	3.4	2.2			2.3		
p0 queue free %	100	98	100	88	96	100	100			100		
cM capacity (veh/h)	567	572	927	840	586	1055	1232			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	126	202	208
Volume Left	0	100	4	0
Volume Right	4	0	0	10
cSH	619	771	1541	1700
Volume to Capacity	0.03	0.16	0.00	0.12
Queue Length 95th (ft)	2	15	0	0
Control Delay (s)	11.0	10.6	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.0	10.6	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.8		
Intersection Capacity Utilization		30.9%	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	394	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	424	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	461	453	220	245	459	4	437			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	461	453	220	245	459	4	437			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	98	100	100			99		
cM capacity (veh/h)	476	502	790	674	498	1080	1120			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	223	225
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	529	589	1576	1700
Volume to Capacity	0.03	0.05	0.01	0.13
Queue Length 95th (ft)	2	4	1	0
Control Delay (s)	12.0	11.4	0.4	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	11.4	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization		30.2%	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	349	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	371	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	440			0			455	434	222	232	468	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	440			0			455	434	222	232	468	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	94	100	81	91	100
cM capacity (veh/h)	1116			1565			456	514	788	667	489	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	199	255	33	172
Volume Left	14	0	0	129
Volume Right	0	69	1	0
cSH	1565	1700	520	611
Volume to Capacity	0.01	0.15	0.06	0.28
Queue Length 95th (ft)	1	0	5	29
Control Delay (s)	0.6	0.0	12.4	13.2
Lane LOS	A		B	B
Approach Delay (s)	0.3		12.4	13.2
Approach LOS			B	B

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	34.3%	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	0	0	0	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	0	0	0	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	49			29			70	78	49	70	70	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	49			29			70	78	49	70	70	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)	1571			1584			922	658	1020	908	810	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	49	0	5
Volume Left	0	0	0	5
Volume Right	17	0	0	0
cSH	1571	1584	1700	908
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	0.0	9.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	9.0
Approach LOS			A	A

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	13.3%	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	44	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	48	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	61	48	49			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	48	49			
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)	944	1020	1571			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	49
Volume Left	1	1	0
Volume Right	1	0	1
cSH	981	1571	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

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	34	393	4	4	437	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	502	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	502			456			1092	1044	454	1052	1049	506
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	502			456			1092	1044	454	1052	1049	506
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			89	98	99	97	100	91
cM capacity (veh/h)	1017			1115			163	212	588	186	210	549

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	39	456	5	509	28	54
Volume Left	39	0	5	0	18	6
Volume Right	0	5	0	7	6	48
cSH	1017	1700	1115	1700	198	455
Volume to Capacity	0.04	0.27	0.00	0.30	0.14	0.12
Queue Length 95th (ft)	3	0	0	0	12	10
Control Delay (s)	8.7	0.0	8.2	0.0	26.0	14.0
Lane LOS	A		A		D	B
Approach Delay (s)	0.7		0.1		26.0	14.0
Approach LOS					D	B

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

8/12/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	332	10	15	388	98	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	422	107	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	528			372			943	964	366	960	916	475
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528			372			943	964	366	960	916	475
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			96	94	94	73	98	95
cM capacity (veh/h)	999			1144			210	236	653	206	264	592

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	390	545	65	92
Volume Left	18	16	9	57
Volume Right	11	107	41	29
cSH	999	1144	385	265
Volume to Capacity	0.02	0.01	0.17	0.35
Queue Length 95th (ft)	1	1	15	38
Control Delay (s)	0.6	0.4	16.2	25.7
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	16.2	25.7
Approach LOS			C	D

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	49.8%	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	281	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	316	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	316			326			356	672	325	406	357	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	316			326			356	672	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	90	95	100	100	100
cM capacity (veh/h)	1217			596			591	371	716	485	559	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	326	4	316	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	316	33
cSH	1217	1700	596	1700	481
Volume to Capacity	0.01	0.19	0.01	0.19	0.14
Queue Length 95th (ft)	1	0	1	0	12
Control Delay (s)	8.0	0.0	11.1	0.0	13.7
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.2		13.7
Approach LOS					B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

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

8/12/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	240	0	37	0	0	0	31	228	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)	282	0	44	0	0	0	36	268	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			44		605	608	0	873	586	22
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			44		605	608	0	873	586	22
tC, single (s)	4.7			4.1		7.6	6.5	6.9	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.8			2.2		4.0	4.0	3.9	3.5	4.0	3.3
p0 queue free %	78			100		100	89	71	98	89	100
cM capacity (veh/h)	1305			1565		265	318	924	148	333	1061

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	326	0	305	40
Volume Left	282	0	0	2
Volume Right	44	0	268	0
cSH	1305	1700	753	310
Volume to Capacity	0.22	0.00	0.40	0.13
Queue Length 95th (ft)	21	0	49	11
Control Delay (s)	7.6	0.0	13.0	18.3
Lane LOS	A		B	C
Approach Delay (s)	7.6	0.0	13.0	18.3
Approach LOS			B	C

Intersection Summary			
Average Delay	10.7		
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	110	120	0	99	178	174
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	120	130	0	108	193	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			250		292	185
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			250		292	185
tC, single (s)			4.1		6.9	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.0	3.3
p0 queue free %			100		68	78
cM capacity (veh/h)			1327		607	863

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	250	108	383
Volume Left	0	0	193
Volume Right	130	0	189
cSH	1700	1327	711
Volume to Capacity	0.15	0.00	0.54
Queue Length 95th (ft)	0	0	81
Control Delay (s)	0.0	0.0	15.8
Lane LOS			C
Approach Delay (s)	0.0	0.0	15.8
Approach LOS			C

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	0	58	0	0	58	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	63	0	0	63	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			63		32	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			63		32	32
tC, single (s)			4.1		7.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.4	3.3
p0 queue free %			100		92	100
cM capacity (veh/h)			1540		782	1042

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	63	0	63
Volume Left	0	0	63
Volume Right	63	0	0
cSH	1700	1700	782
Volume to Capacity	0.04	0.00	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.0	10.0
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.0
Approach LOS			B

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	13.6%	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)	11	460	4	15	559	31	33	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			0.96	1.00		0.97	
Satd. Flow (prot)		1560			1653			1780	1538		1747	
Flt Permitted		0.99			0.99			0.73	1.00		0.79	
Satd. Flow (perm)		1540			1633			1348	1538		1420	
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	495	4	16	601	33	35	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	511	0	0	649	0	0	43	4	0	44	0
Heavy Vehicles (%)	7%	22%	7%	2%	15%	2%	2%	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)		28.8			28.8			5.9	5.9		5.9	
Effective Green, g (s)		29.3			29.3			6.4	6.4		6.4	
Actuated g/C Ratio		0.67			0.67			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)		1033			1095			197	225		208	
v/s Ratio Prot												
v/s Ratio Perm		0.33			c0.40			c0.03	0.00		0.03	
v/c Ratio		0.49			0.59			0.22	0.02		0.21	
Uniform Delay, d1		3.5			3.9			16.4	16.0		16.4	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.4			0.9			0.6	0.0		0.5	
Delay (s)		3.9			4.8			17.0	16.0		16.9	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.9			4.8			16.6			16.9	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	43.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	179	15	130	266	19	131
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	148	302	22	149
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		801	203
vC1, stage 1 conf vol					203	
vC2, stage 2 conf vol					598	
vCu, unblocked vol			220		801	203
tC, single (s)			5.1		6.5	7.2
tC, 2 stage (s)					5.5	
tF (s)			3.1		3.6	4.2
p0 queue free %			84		95	77
cM capacity (veh/h)			942		423	647

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	203	17	148	302	170
Volume Left	0	0	148	0	22
Volume Right	0	17	0	0	149
cSH	1700	1700	942	1700	607
Volume to Capacity	0.12	0.01	0.16	0.18	0.28
Queue Length 95th (ft)	0	0	14	0	29
Control Delay (s)	0.0	0.0	9.5	0.0	13.2
Lane LOS			A		B
Approach Delay (s)	0.0		3.1		13.2
Approach LOS					B

Intersection Summary			
Average Delay	4.4		
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 (vph)	119	1451	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)		3230						3240			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3230						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	1560	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	1700	0	0	0	0	0	62	0	0	104	0
Heavy Vehicles (%)	2%	6%	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)		2533						329			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.53									c0.03	
v/c Ratio		0.67						0.19			0.33	
Uniform Delay, d1		3.4						28.8			29.3	
Progression Factor		1.00						1.00			0.55	
Incremental Delay, d2		1.4						0.3			0.6	
Delay (s)		4.9						29.1			16.7	
Level of Service		A						C			B	
Approach Delay (s)		4.9			0.0			29.1			16.7	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.6	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	58.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1463	71	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)		3218						1711			1621	
Flt Permitted		1.00						1.00			0.57	
Satd. Flow (perm)		3218						1711			954	
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	1721	84	0	0	0	0	94	142	91	96	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	1820	0	0	0	0	0	225	0	0	187	0
Heavy Vehicles (%)	2%	6%	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)		45.5						15.5			15.5	
Effective Green, g (s)		45.5						15.5			15.5	
Actuated g/C Ratio		0.66						0.22			0.22	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		2122						384			214	
v/s Ratio Prot								0.13				
v/s Ratio Perm		0.57									c0.20	
v/c Ratio		0.86						0.59			0.87	
Uniform Delay, d1		9.2						23.9			25.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		3.6						2.3			30.1	
Delay (s)		12.8						26.2			55.9	
Level of Service		B						C			E	
Approach Delay (s)		12.8			0.0			26.2			55.9	
Approach LOS		B			A			C			E	

Intersection Summary			
HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1457	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)		3230						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3230						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	1502	19	0	0	0	0	26	25	26	29	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1543	0	0	0	0	0	28	0	0	55	0
Heavy Vehicles (%)	2%	6%	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)		38.7						4.6			4.6	
Effective Green, g (s)		39.2						5.1			5.1	
Actuated g/C Ratio		0.75						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)		2421						156			132	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.48									c0.04	
v/c Ratio		0.64						0.18			0.42	
Uniform Delay, d1		3.1						21.7			22.2	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.6						0.6			2.1	
Delay (s)		3.7						22.2			24.3	
Level of Service		A						C			C	
Approach Delay (s)		3.7			0.0			22.2			24.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	5.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	52.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
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)	52	1481	26	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)	54	1527	27	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			1554			1671	1647	777	924	1661	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1554			1671	1647	777	924	1661	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	66	89	69	51	100
cM capacity (veh/h)	1607			422			37	94	338	146	95	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	817	790	69	92
Volume Left	54	0	0	45
Volume Right	0	27	37	0
cSH	1607	1700	154	115
Volume to Capacity	0.03	0.46	0.45	0.80
Queue Length 95th (ft)	3	0	51	115
Control Delay (s)	0.9	0.0	46.3	106.8
Lane LOS	A		E	F
Approach Delay (s)	0.5		46.3	106.8
Approach LOS			E	F

Intersection Summary			
Average Delay	7.8		
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	1161	12	0	0	0	0	357	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	3172						3459				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3172						3459				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	108	1262	13	0	0	0	0	388	9	0	0	0
RTOR Reduction (vph)	46	1	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	62	1274	0	0	0	0	0	395	0	0	0	0
Heavy Vehicles (%)	3%	8%	3%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	27.3	27.3						11.7				
Effective Green, g (s)	28.3	28.3						12.7				
Actuated g/C Ratio	0.58	0.58						0.26				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	1012	1832						897				
v/s Ratio Prot		c0.40						c0.11				
v/s Ratio Perm	0.04											
v/c Ratio	0.06	0.70						0.44				
Uniform Delay, d1	4.5	7.3						15.2				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	1.2						0.3				
Delay (s)	4.6	8.5						15.5				
Level of Service	A	A						B				
Approach Delay (s)		8.2			0.0			15.5			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	49.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.4%	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	1204	70	0	0	0	0	27	345	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					0.87	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2764	1300					1555	1519		1812	
Flt Permitted		1.00	1.00					1.00	1.00		0.67	
Satd. Flow (perm)		2764	1300					1555	1519		1248	
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	1295	75	0	0	0	0	29	371	44	34	0
RTOR Reduction (vph)	0	0	10	0	0	0	0	30	30	0	0	0
Lane Group Flow (vph)	0	1313	65	0	0	0	0	173	167	0	78	0
Heavy Vehicles (%)	6%	11%	6%	2%	2%	2%	2%	2%	1%	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)		47.9	47.9					13.1	13.1		13.1	
Effective Green, g (s)		48.4	48.4					13.6	13.6		13.6	
Actuated g/C Ratio		0.69	0.69					0.19	0.19		0.19	
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)		1911	899					302	295		242	
v/s Ratio Prot		c0.47						c0.11				
v/s Ratio Perm			0.05						0.11		0.06	
v/c Ratio		0.69	0.07					0.57	0.57		0.32	
Uniform Delay, d1		6.3	3.5					25.6	25.5		24.2	
Progression Factor		0.39	0.38					1.00	1.00		1.00	
Incremental Delay, d2		1.7	0.1					2.6	2.5		0.8	
Delay (s)		4.2	1.5					28.2	28.0		25.0	
Level of Service		A	A					C	C		C	
Approach Delay (s)		4.1			0.0			28.1			25.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	10.1	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	63.0%	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)	23	1175	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)		2759						1314			1462	
Flt Permitted		1.00						1.00			0.88	
Satd. Flow (perm)		2759						1314			1306	
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	1237	25	0	0	0	0	13	91	7	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	38	0	0	0	0
Lane Group Flow (vph)	0	1285	0	0	0	0	0	66	0	0	18	0
Heavy Vehicles (%)	6%	11%	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)		54.0						8.0			8.0	
Effective Green, g (s)		54.0						8.0			8.0	
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)		2128						150			149	
v/s Ratio Prot								c0.05				
v/s Ratio Perm		0.47									0.01	
v/c Ratio		0.60						0.44			0.12	
Uniform Delay, d1		3.4						28.9			27.8	
Progression Factor		0.45						1.00			1.00	
Incremental Delay, d2		0.7						2.1			0.4	
Delay (s)		2.2						31.0			28.2	
Level of Service		A						C			C	
Approach Delay (s)		2.2			0.0			31.0			28.2	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.7	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	47.3%	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	1034	16	0	0	0	0	0	29	289	204	0
Ideal Flow (vphpl)	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)		2736							1289	1681	1403	
Flt Permitted		1.00							1.00	0.95	0.99	
Satd. Flow (perm)		2736							1289	1681	1403	
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	1088	17	0	0	0	0	0	31	304	215	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	170	12	0
Lane Group Flow (vph)	0	1103	0	0	0	0	0	0	4	85	252	0
Heavy Vehicles (%)	6%	12%	6%	2%	2%	2%	2%	1%	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)		29.5							9.5	17.5	17.5	
Effective Green, g (s)		30.0							10.0	18.0	18.0	
Actuated g/C Ratio		0.43							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)		1173							184	432	361	
v/s Ratio Prot		c0.40							c0.00	0.05	c0.18	
v/s Ratio Perm												
v/c Ratio		0.94							0.02	0.20	0.70	
Uniform Delay, d1		19.1							25.8	20.3	23.5	
Progression Factor		1.13							1.00	1.00	1.00	
Incremental Delay, d2		14.1							0.2	1.0	10.7	
Delay (s)		35.7							26.0	21.4	34.2	
Level of Service		D							C	C	C	
Approach Delay (s)		35.7			0.0			26.0			27.9	
Approach LOS		D			A			C			C	

Intersection Summary			
HCM Average Control Delay	33.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	7	511	12	0	0	0	0	68	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						0.96		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2578						1446		1681	1360	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2578						1446		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	544	13	0	0	0	0	72	27	489	50	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	0	562	0	0	0	0	0	79	0	269	270	0
Heavy Vehicles (%)	6%	19%	6%	2%	2%	2%	2%	1%	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)		24.0						7.6		24.9	24.9	
Effective Green, g (s)		24.5						8.1		25.4	25.4	
Actuated g/C Ratio		0.35						0.12		0.36	0.36	
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)		902						167		610	493	
v/s Ratio Prot								c0.05		0.16	c0.20	
v/s Ratio Perm		0.22										
v/c Ratio		0.62						0.47		0.44	0.55	
Uniform Delay, d1		18.9						28.9		16.9	17.7	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		1.3						2.1		2.3	4.3	
Delay (s)		20.3						31.1		19.2	22.1	
Level of Service		C						C		B	C	
Approach Delay (s)		20.3			0.0			31.1			20.6	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.0%	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	437	0	626	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)		1552		1906		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1552		1906		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	486	0	696	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	486	0	696	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	20%	2%	13%	3%	3%
Turn Type		custom				
Protected Phases		2		6		
Permitted Phases						
Actuated Green, G (s)		33.2		33.2		
Effective Green, g (s)		33.2		33.2		
Actuated g/C Ratio		0.77		0.77		
Clearance Time (s)		4.0		4.0		
Vehicle Extension (s)		3.0		3.0		
Lane Grp Cap (vph)		1193		1465		
v/s Ratio Prot		0.31		c0.37		
v/s Ratio Perm						
v/c Ratio		0.41		0.48		
Uniform Delay, d1		1.7		1.8		
Progression Factor		1.00		1.00		
Incremental Delay, d2		0.2		0.2		
Delay (s)		1.9		2.1		
Level of Service		A		A		
Approach Delay (s)	1.9			2.1	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM Average Control Delay	2.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	43.2	Sum of lost time (s)	10.0
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	0	0	13	1010	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)					3276			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3276			3045			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	1052	23	19	170	0	0	94	253
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	55	0
Lane Group Flow (vph)	0	0	0	0	1088	0	0	189	0	0	292	0
Heavy Vehicles (%)	2%	2%	2%	3%	10%	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)					48.5			12.5			12.5	
Effective Green, g (s)					49.0			13.0			13.0	
Actuated g/C Ratio					0.70			0.19			0.19	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2293			566			556	
v/s Ratio Prot											c0.10	
v/s Ratio Perm					0.33			0.06				
v/c Ratio					0.47			0.33			0.52	
Uniform Delay, d1					4.7			24.7			25.7	
Progression Factor					1.16			1.02			1.00	
Incremental Delay, d2					0.6			0.3			0.9	
Delay (s)					6.1			25.5			26.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.1			25.5			26.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1312	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)					3200			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3200			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	1396	20	14	405	0	0	54	290
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	38
Lane Group Flow (vph)	0	0	0	0	1429	0	0	419	0	0	54	252
Heavy Vehicles (%)	2%	2%	2%	2%	7%	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)					1966			456			464	438
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.45			c0.25				0.16
v/c Ratio					0.73			0.92			0.12	0.58
Uniform Delay, d1					9.4			24.8			19.2	22.0
Progression Factor					0.70			1.00			1.00	1.00
Incremental Delay, d2					2.2			26.1			0.5	5.4
Delay (s)					8.8			50.8			19.7	27.4
Level of Service					A			D			B	C
Approach Delay (s)		0.0			8.8			50.8			26.2	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.6	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	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1248	92	32	80	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		0.99			1.00	
Satd. Flow (prot)					3405	1553		1818			1794	
Flt Permitted					1.00	1.00		0.84			1.00	
Satd. Flow (perm)					3405	1553		1541			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	1314	97	34	84	0	0	222	101
RTOR Reduction (vph)	0	0	0	0	0	40	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1360	57	0	118	0	0	299	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	6%	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)					32.8	32.8		15.3			15.3	
Effective Green, g (s)					32.8	32.8		15.3			15.3	
Actuated g/C Ratio					0.58	0.58		0.27			0.27	
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)					1991	908		420			489	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.40	0.04		0.08				
v/c Ratio					0.68	0.06		0.28			0.61	
Uniform Delay, d1					8.1	5.0		16.1			17.8	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					1.0	0.0		0.4			2.3	
Delay (s)					9.0	5.1		16.4			20.1	
Level of Service					A	A		B			C	
Approach Delay (s)		0.0			8.8			16.4			20.1	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	33	1408	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)					3174			1617			1777	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					3174			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	1498	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	1538	0	0	26	0	0	23	0
Heavy Vehicles (%)	2%	2%	2%	3%	8%	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)					2400			75			80	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.48			c0.02				
v/c Ratio					0.64			0.35			0.29	
Uniform Delay, d1					2.3			18.6			18.6	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.6			2.8			2.0	
Delay (s)					2.9			21.4			20.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.9			21.4			20.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.7%	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	1299	12	52	18	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	1427	13	57	20	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	1441			0			828	1533	0	1536	1526	720
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1441			0			828	1533	0	1536	1526	720
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			74	83	100	100	83	97
cM capacity (veh/h)	467			1622			217	113	1084	68	115	375

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	760	727	77	32
Volume Left	46	0	57	0
Volume Right	0	13	0	12
cSH	1622	1700	175	156
Volume to Capacity	0.03	0.43	0.44	0.20
Queue Length 95th (ft)	2	0	50	18
Control Delay (s)	0.8	0.0	40.6	33.8
Lane LOS	A		E	D
Approach Delay (s)	0.4		40.6	33.8
Approach LOS			E	D

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	54.7%	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)	0	0	0	0	1287	2	418	18	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)					3205		1603	1613				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3205		1603	1613				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	1446	2	470	20	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	1448	0	88	90	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	7%	2%	7%	7%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					31.3		9.0	9.0				0.7
Effective Green, g (s)					32.3		10.0	10.0				1.7
Actuated g/C Ratio					0.58		0.18	0.18				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)					1849		286	288				49
v/s Ratio Prot					c0.45							
v/s Ratio Perm							0.05	0.06				c0.00
v/c Ratio					0.78		0.31	0.31				0.00
Uniform Delay, d1					9.1		20.0	20.0				26.3
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					2.2		0.6	0.6				0.0
Delay (s)					11.4		20.6	20.6				26.4
Level of Service					B		C	C				C
Approach Delay (s)		0.0			11.4			20.6			26.4	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	13.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	56.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.4%	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	1304	177	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	1373	186	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	1373				1373	686
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1373				1373	686
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)	496				134	385

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	686	686	186	89
Volume Left	0	0	0	0
Volume Right	0	0	186	89
cSH	1700	1700	1700	385
Volume to Capacity	0.40	0.40	0.11	0.23
Queue Length 95th (ft)	0	0	0	22
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	0.9		
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	462	1159	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)	476	1195	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			476	476	476	1671	1671	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			476	476	476	1671	1671	
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)			488	589	499	96	384	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	875	797	8	101
Volume Left	0	0	8	0
Volume Right	398	797	0	0
cSH	1700	1700	499	96
Volume to Capacity	0.51	0.47	0.02	1.05
Queue Length 95th (ft)	0	0	1	162
Control Delay (s)	0.0	0.0	12.3	188.7
Lane LOS			B	F
Approach Delay (s)	0.0		175.4	
Approach LOS			F	

Intersection Summary			
Average Delay	10.8		
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	75	0	0	1279	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)	1787			3343		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1787			3343		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	0	0	1390	0	508
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	82	0	0	1390	0	508
Heavy Vehicles (%)	1%	2%	12%	8%	3%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	15.9			52.2		77.1
Effective Green, g (s)	16.4			52.7		77.1
Actuated g/C Ratio	0.21			0.68		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	380			2285		2787
v/s Ratio Prot	c0.05			c0.42		
v/s Ratio Perm						c0.18
v/c Ratio	0.22			0.61		0.18
Uniform Delay, d1	25.0			6.6		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			1.1		0.1
Delay (s)	25.1			7.7		0.1
Level of Service	C			A		A
Approach Delay (s)	25.1			7.7	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	4.0
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	718	584	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)			1558	1845	3467	
Flt Permitted			0.37	1.00	1.00	
Satd. Flow (perm)			603	1845	3467	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	748	608	486	38
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	0	748	608	518	0
Heavy Vehicles (%)	2%	2%	12%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			57.2	61.7	25.8	
Effective Green, g (s)			58.2	62.2	26.3	
Actuated g/C Ratio			0.75	0.81	0.34	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			850	1488	1183	
v/s Ratio Prot			c0.36	0.33	0.15	
v/s Ratio Perm			c0.30			
v/c Ratio			0.88	0.41	0.44	
Uniform Delay, d1			8.6	2.1	19.7	
Progression Factor			0.73	0.10	1.00	
Incremental Delay, d2			8.7	0.6	0.1	
Delay (s)			14.9	0.9	19.8	
Level of Service			B	A	B	
Approach Delay (s)	0.0			8.6	19.8	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	18.9
Intersection Capacity Utilization	60.5%	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

8/13/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	1138	241	0	0	0	22	0	338	133	0	0	0
Ideal Flow (vphpl)	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		0.96				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1633	1670				1277		2562				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1633	1670				1277		2562				
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)	1224	259	0	0	0	24	0	363	143	0	0	0
RTOR Reduction (vph)	262	70	0	0	0	24	0	56	0	0	0	0
Lane Group Flow (vph)	472	679	0	0	0	0	0	451	0	0	0	0
Heavy Vehicles (%)	5%	4%	2%	0%	0%	3%	0%	13%	19%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	38.3	38.3				2.0		17.7				
Effective Green, g (s)	38.8	38.8				1.0		18.2				
Actuated g/C Ratio	0.55	0.55				0.01		0.26				
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)	905	926				18		666				
v/s Ratio Prot								c0.18				
v/s Ratio Perm	0.29	0.41				c0.00						
v/c Ratio	0.52	0.73				0.02		0.68				
Uniform Delay, d1	9.8	11.7				34.0		23.3				
Progression Factor	0.65	0.16				1.00		1.00				
Incremental Delay, d2	1.1	2.6				0.2		2.7				
Delay (s)	7.4	4.5				34.2		26.0				
Level of Service	A	A				C		C				
Approach Delay (s)		5.9			34.2			26.0			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	11.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.1%	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

8/13/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	22	0	0	169	18	34	1471	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			4887				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1271			1644			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	23	0	0	178	19	36	1548	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	1590	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	15%	5%	5%	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)		13.5			13.5			47.5				
Effective Green, g (s)		14.0			14.0			48.0				
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)		254			329			3351				
v/s Ratio Prot					c0.12							
v/s Ratio Perm		0.03						0.33				
v/c Ratio		0.16			0.58			0.47				
Uniform Delay, d1		23.1			25.3			5.1				
Progression Factor		1.07			1.00			0.65				
Incremental Delay, d2		0.3			2.5			0.4				
Delay (s)		25.0			27.8			3.7				
Level of Service		C			C			A				
Approach Delay (s)		25.0			27.8			3.7			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.8	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	51.3%	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

8/13/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	92	147	0	0	83	116	53	1529	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			1712	1504		4520				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1240			1712	1504		4520				
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	87	122	56	1609	111	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	21	0	10	0	0	0	0
Lane Group Flow (vph)	0	252	0	0	96	77	0	1766	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	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)		319			440	387		2841				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.39				
v/c Ratio		0.79			0.22	0.20		0.62				
Uniform Delay, d1		24.2			20.5	20.4		7.9				
Progression Factor		0.96			1.00	1.00		2.17				
Incremental Delay, d2		11.6			0.3	0.3		1.0				
Delay (s)		34.9			20.7	20.6		18.2				
Level of Service		C			C	C		B				
Approach Delay (s)		34.9			20.7			18.2			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	78	31	0	0	73	32	28	1524	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	1752	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	17	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	126	0	0	104	0	0	1833	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			0.59				
Uniform Delay, d1		26.4			25.3			5.0				
Progression Factor		1.61			1.00			0.26				
Incremental Delay, d2		2.8			0.6			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	6.0	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	50.3%	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)	238	26	0	0	32	18	43	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	46	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	1890	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)		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						0.43				
v/c Ratio		0.88			0.10			0.74				
Uniform Delay, d1		23.2			17.6			10.7				
Progression Factor		0.67			1.00			0.63				
Incremental Delay, d2		22.4			0.1			1.6				
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	62.4%	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

8/13/2009

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			0.95						0.68	
Incremental Delay, d2		1.6			2.8						0.5	
Delay (s)		29.6			29.9						2.7	
Level of Service		C			C						A	
Approach Delay (s)		29.6			29.9			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	36	25	57	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)		1451			1468						4405	
Flt Permitted		1.00			0.87						1.00	
Satd. Flow (perm)		1451			1300						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	39	27	62	0	0	0	0	10	1355	86
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	185	0	0	89	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)		14.1			14.1						45.9	
Effective Green, g (s)		14.6			14.6						47.4	
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)		303			271						2983	
v/s Ratio Prot		c0.13										
v/s Ratio Perm					0.07						0.33	
v/c Ratio		0.61			0.33						0.48	
Uniform Delay, d1		25.1			23.5						5.4	
Progression Factor		1.00			1.04						0.25	
Incremental Delay, d2		3.6			0.7						0.5	
Delay (s)		28.7			25.2						1.9	
Level of Service		C			C						A	
Approach Delay (s)		28.7			25.2			0.0			1.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	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 Signalized Intersection Capacity Analysis
312: S "K" Street & W Wishkah Street #1011

8/13/2009

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	1262	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	1372	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	1419	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						0.42	
Uniform Delay, d1		28.2			27.9						3.1	
Progression Factor		1.00			0.53						0.22	
Incremental Delay, d2		1.9			1.3						0.4	
Delay (s)		30.1			16.0						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.1			16.0			0.0			1.0	
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	41.9%	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	106	15	58	74	0	0	0	0	133	1123	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			1823						4570	
Flt Permitted		1.00			0.83						0.99	
Satd. Flow (perm)		1831			1555						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	16	61	78	0	0	0	0	140	1182	33
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	121	0	0	139	0	0	0	0	0	1351	0
Heavy Vehicles (%)	2%	2%	2%	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)		536			455						2709	
v/s Ratio Prot		0.07										
v/s Ratio Perm					c0.09						0.30	
v/c Ratio		0.23			0.31						0.50	
Uniform Delay, d1		18.7			19.2						8.2	
Progression Factor		1.00			0.96						0.84	
Incremental Delay, d2		1.0			1.6						0.6	
Delay (s)		19.7			20.0						7.5	
Level of Service		B			C						A	
Approach Delay (s)		19.7			20.0			0.0			7.5	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.6	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	48.7%	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	162	0	0	0	0	22	344	843
Ideal Flow (vphpl)	1900	1900	1900	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					0.99						1.00	1.00
Satd. Flow (prot)					1326						2491	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1326						2491	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	172	0	0	0	0	23	366	897
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	158	158
Lane Group Flow (vph)	0	0	0	0	202	0	0	0	0	0	680	290
Heavy Vehicles (%)	2%	2%	2%	64%	5%	2%	2%	2%	2%	0%	13%	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)					316						1612	906
v/s Ratio Prot												
v/s Ratio Perm					0.15						0.27	0.21
v/c Ratio					0.64						0.42	0.32
Uniform Delay, d1					23.9						6.0	5.5
Progression Factor					0.81						0.44	0.82
Incremental Delay, d2					4.1						0.7	0.8
Delay (s)					23.5						3.3	5.3
Level of Service					C						A	A
Approach Delay (s)		0.0			23.5			0.0			4.0	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.7	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	51.5%	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	1322	23	0	0	0	0	0	0	19	332	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)		3113									2594	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3113									2594	
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	1520	26	0	0	0	0	0	0	22	382	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	1545	0	0	0	0	0	0	0	0	400	0
Heavy Vehicles (%)	0%	4%	10%	2%	2%	2%	2%	2%	2%	0%	19%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		40.0									21.0	
Effective Green, g (s)		40.5									21.5	
Actuated g/C Ratio		0.58									0.31	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1801									797	
v/s Ratio Prot		c0.50										
v/s Ratio Perm											0.15	
v/c Ratio		0.86									0.50	
Uniform Delay, d1		12.3									19.9	
Progression Factor		0.75									1.43	
Incremental Delay, d2		4.5									0.5	
Delay (s)		13.7									28.9	
Level of Service		B									C	
Approach Delay (s)		13.7			0.0			0.0			28.9	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.1%	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)	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						1.82	2.04			
Incremental Delay, d2		1.1						4.6	2.3			
Delay (s)		20.8						25.1	18.5			
Level of Service		C						C	B			
Approach Delay (s)		20.8			0.0			23.7			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	22.9	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	30.0	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

8/13/2009

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

8/13/2009

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)	568	1	3	513	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)	611	1	3	552	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			612		1169	611
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			612		1169	611
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		94	99
cM capacity (veh/h)			939		171	416

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	612	555	12
Volume Left	0	3	10
Volume Right	1	0	2
cSH	1700	939	192
Volume to Capacity	0.36	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	25.0
Lane LOS		A	C
Approach Delay (s)	0.0	0.1	25.0
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	561	0	2	539	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	610	0	2	586	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	598			613			1239	1234	615	1229	1229	593
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	598			613			1239	1234	615	1229	1229	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			100			100	99	100	93	99	98
cM capacity (veh/h)	964			950			147	175	493	149	172	497

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	620	599	1	21
Volume Left	10	2	0	10
Volume Right	0	11	0	9
cSH	964	950	175	215
Volume to Capacity	0.01	0.00	0.01	0.10
Queue Length 95th (ft)	1	0	0	8
Control Delay (s)	0.3	0.1	25.7	23.5
Lane LOS	A	A	D	C
Approach Delay (s)	0.3	0.1	25.7	23.5
Approach LOS			D	C

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	564	1	1	534	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	613	1	1	580	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	582			614			1200	1199	614	1200	1199	581
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	582			614			1200	1199	614	1200	1199	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			100			99	100	100	99	100	100
cM capacity (veh/h)	978			951			161	185	492	161	185	514

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	615	583	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	978	951	243	245
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	20.0	19.8
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	20.0	19.8
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	477	35	10	477	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	524	38	11	524	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	538			563			1235	1207	545	1206	1220	533
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	538			563			1235	1207	545	1206	1220	533
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
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 %	95			99			95	99	100	88	99	94
cM capacity (veh/h)	1013			975			137	173	541	150	169	545

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	614	547	11	54
Volume Left	52	11	7	19
Volume Right	38	12	2	34
cSH	1013	975	170	278
Volume to Capacity	0.05	0.01	0.06	0.19
Queue Length 95th (ft)	4	1	5	18
Control Delay (s)	1.3	0.3	27.7	21.0
Lane LOS	A	A	D	C
Approach Delay (s)	1.3	0.3	27.7	21.0
Approach LOS			D	C

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	497	0	0	27	498
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	541
Pedestrians						
Lane Width (ft)						
Walking Speed (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	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600	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)			455	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	540	29	541
Volume Left	0	29	0
Volume Right	540	0	0
cSH	1700	1578	1700
Volume to Capacity	0.32	0.02	0.32
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.4	
Approach LOS			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	510	5	0	16	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	18	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	89	100	100
cM capacity (veh/h)	1585		146	158	162	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	374	192	18
Volume Left	374	187	0
Volume Right	0	5	0
cSH	1585	1585	158
Volume to Capacity	0.35	0.35	0.11
Queue Length 95th (ft)	41	41	9
Control Delay (s)	8.5	8.4	30.5
Lane LOS	A	A	D
Approach Delay (s)	8.5		30.5
Approach LOS			D

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	24.7%	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)	22	3	0	0	172	8	12	502	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	570	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	419	622	0	611	610	297	0			594		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	419	622	0	611	610	297	0			594		
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 %	92	99	100	100	52	99	99			100		
cM capacity (veh/h)	319	402	1091	375	406	702	1600			978		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	28	205	299	309
Volume Left	25	0	14	0
Volume Right	0	9	0	24
cSH	327	414	1600	1700
Volume to Capacity	0.09	0.49	0.01	0.18
Queue Length 95th (ft)	7	66	1	0
Control Delay (s)	17.0	21.9	0.4	0.0
Lane LOS	C	C	A	
Approach Delay (s)	17.0	21.9	0.2	
Approach LOS	C	C		

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/13/2009

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	516	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	538	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	290	553	2	556	551	271	0			543		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	290	553	2	556	551	271	0			543		
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 %	99	99	100	100	96	100	100			100		
cM capacity (veh/h)	624	442	1086	412	444	733	1593			1022		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	15	19	274	274
Volume Left	8	0	5	0
Volume Right	0	2	0	5
cSH	530	464	1593	1700
Volume to Capacity	0.03	0.04	0.00	0.16
Queue Length 95th (ft)	2	3	0	0
Control Delay (s)	12.0	13.1	0.2	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	13.1	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		0.8		
Intersection Capacity Utilization		29.0%	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)	10	6	0	0	92	9	19	480	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	22	558	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	390	616	4	614	613	287	3			569		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	390	616	4	614	613	287	3			569		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.3			2.2		
p0 queue free %	97	98	100	100	71	98	99			100		
cM capacity (veh/h)	375	362	1019	329	363	657	1571			996		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	117	301	286
Volume Left	12	0	22	0
Volume Right	0	10	0	7
cSH	370	378	1571	1700
Volume to Capacity	0.05	0.31	0.01	0.17
Queue Length 95th (ft)	4	32	1	0
Control Delay (s)	15.3	18.7	0.7	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.3	18.7	0.3	
Approach LOS	C	C		

Intersection Summary				
Average Delay		3.7		
Intersection Capacity Utilization		31.7%	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	12	3	86	23	0	0	0	0	3	340	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	4	102	27	0	0	0	0	4	405	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	0.94	0.94	0.94	0.94	0.94		0.94					
vC, conflicting volume	434	427	211	227	433	7	418			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	271	263	33	51	269	7	254			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	4.1	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	95	100	100			100		
cM capacity (veh/h)	563	569	931	844	583	1055	1227			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	130	206	213
Volume Left	0	102	4	0
Volume Right	4	0	0	11
cSH	617	772	1541	1700
Volume to Capacity	0.03	0.17	0.00	0.13
Queue Length 95th (ft)	2	15	0	0
Control Delay (s)	11.0	10.6	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.0	10.6	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.8		
Intersection Capacity Utilization		31.3%	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	12	2	16	11	0	0	0	0	10	402	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	432	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	469	461	225	249	468	4	445			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	469	461	225	249	468	4	445			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	98	100	100			99		
cM capacity (veh/h)	469	496	785	669	492	1080	1111			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	227	229
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	524	584	1576	1700
Volume to Capacity	0.03	0.05	0.01	0.13
Queue Length 95th (ft)	2	4	1	0
Control Delay (s)	12.1	11.5	0.4	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.1	11.5	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization		30.4%	ICU Level of Service	A
Analysis Period (min)		15		

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	356	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	379	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	449			0			464	441	226	236	477	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	449			0			464	441	226	236	477	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	94	100	80	91	100
cM capacity (veh/h)	1108			1565			449	509	783	662	484	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	203	260	33	176
Volume Left	14	0	0	131
Volume Right	0	70	1	0
cSH	1565	1700	514	605
Volume to Capacity	0.01	0.15	0.06	0.29
Queue Length 95th (ft)	1	0	5	30
Control Delay (s)	0.6	0.0	12.5	13.4
Lane LOS	A		B	B
Approach Delay (s)	0.2		12.5	13.4
Approach LOS			B	B

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
362: S Division Street & W Heron Street

8/13/2009

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	0	0	0	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	0	0	0	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	49			29			70	78	49	70	70	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	49			29			70	78	49	70	70	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)	1558			1584			922	658	1020	908	810	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	49	0	5
Volume Left	0	0	0	5
Volume Right	17	0	0	0
cSH	1558	1584	1700	908
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	0.0	9.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	9.0
Approach LOS			A	A

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization		13.3%	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	44	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	48	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	61	48	49			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	48	49			
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)	944	1020	1571			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	49
Volume Left	1	1	0
Volume Right	1	0	1
cSH	981	1571	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		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	35	400	4	4	446	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	460	5	5	513	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	513			464			1114	1064	462	1073	1070	516
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	513			464			1114	1064	462	1073	1070	516
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			88	98	99	97	100	91
cM capacity (veh/h)	1008			1108			157	205	581	180	204	542

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	40	464	5	520	28	55
Volume Left	40	0	5	0	18	6
Volume Right	0	5	0	7	6	49
cSH	1008	1700	1108	1700	191	448
Volume to Capacity	0.04	0.27	0.00	0.31	0.14	0.12
Queue Length 95th (ft)	3	0	0	0	12	10
Control Delay (s)	8.7	0.0	8.3	0.0	27.0	14.2
Lane LOS	A		A		D	B
Approach Delay (s)	0.7		0.1		27.0	14.2
Approach LOS					D	B

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	339	10	15	396	100	9	14	39	53	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	368	11	16	430	109	10	15	42	58	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	539			379			961	983	374	978	934	485
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	539			379			961	983	374	978	934	485
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	93	71	97	95
cM capacity (veh/h)	990			1137			204	230	646	199	258	584

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	398	555	67	93
Volume Left	18	16	10	58
Volume Right	11	109	42	29
cSH	990	1137	375	257
Volume to Capacity	0.02	0.01	0.18	0.36
Queue Length 95th (ft)	1	1	16	40
Control Delay (s)	0.6	0.4	16.7	26.9
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	16.7	26.9
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	293	2	4	0	287	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	329	2	4	0	322	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	322			331			362	684	330	411	363	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	322			331			362	684	330	411	363	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	90	95	100	100	100
cM capacity (veh/h)	1210			591			586	365	711	480	555	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	331	4	322	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	322	33
cSH	1210	1700	591	1700	475
Volume to Capacity	0.01	0.19	0.01	0.19	0.14
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.0	0.0	11.1	0.0	13.9
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.2		13.9
Approach LOS					B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

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

8/13/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	81	0	58	0	0	0	31	69	62	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)	95	0	68	0	0	0	36	81	73	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			68		244	259	0	324	225	34
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			68		244	259	0	324	225	34
tC, single (s)	4.2			4.1		7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	94			100		100	94	92	86	94	100
cM capacity (veh/h)	1572			1533		641	602	1068	532	637	1045

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	164	0	118	111
Volume Left	95	0	0	73
Volume Right	68	0	81	0
cSH	1572	1700	861	564
Volume to Capacity	0.06	0.00	0.14	0.20
Queue Length 95th (ft)	5	0	12	18
Control Delay (s)	4.5	0.0	9.8	12.9
Lane LOS	A		A	B
Approach Delay (s)	4.5	0.0	9.8	12.9
Approach LOS			A	B

Intersection Summary			
Average Delay	8.5		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	54	77	75	43	96	281
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	59	84	82	47	104	305
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			142		310	101
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			142		310	101
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		84	68
cM capacity (veh/h)			1453		644	960

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	142	128	410
Volume Left	0	82	104
Volume Right	84	0	305
cSH	1700	1453	854
Volume to Capacity	0.08	0.06	0.48
Queue Length 95th (ft)	0	4	66
Control Delay (s)	0.0	5.0	13.1
Lane LOS		A	B
Approach Delay (s)	0.0	5.0	13.1
Approach LOS			B

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	0	1	0	0	1	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1	0	0	1	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1		1	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1		1	1
tC, single (s)			4.1		7.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.4	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1622		818	1084

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	1	0	1
Volume Left	0	0	1
Volume Right	1	0	0
cSH	1700	1700	818
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	9.4
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	342	19	15	442	31	48	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		0.99			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.96	1.00		0.97	
Satd. Flow (prot)		1751			1828			1794	1538		1749	
Flt Permitted		0.98			0.99			0.72	1.00		0.78	
Satd. Flow (perm)		1726			1805			1342	1538		1408	
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	368	20	16	475	33	52	9	27	34	9	14
RTOR Reduction (vph)	0	2	0	0	2	0	0	0	22	0	12	0
Lane Group Flow (vph)	0	398	0	0	522	0	0	61	5	0	45	0
Heavy Vehicles (%)	7%	8%	1%	2%	3%	2%	1%	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)		22.6			22.6			6.2	6.2		6.2	
Effective Green, g (s)		23.1			23.1			6.7	6.7		6.7	
Actuated g/C Ratio		0.61			0.61			0.18	0.18		0.18	
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)		1055			1103			238	273		250	
v/s Ratio Prot												
v/s Ratio Perm		0.23			c0.29			c0.05	0.00		0.03	
v/c Ratio		0.38			0.47			0.26	0.02		0.18	
Uniform Delay, d1		3.7			4.0			13.4	12.8		13.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.6	0.0		0.4	
Delay (s)		3.9			4.3			14.0	12.9		13.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.9			4.3			13.6			13.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	37.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	198	15	5	286	19	6
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)	225	17	6	325	22	7
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			242		561	225
vC1, stage 1 conf vol					225	
vC2, stage 2 conf vol					336	
vCu, unblocked vol			242		561	225
tC, single (s)			4.7		6.5	6.8
tC, 2 stage (s)					5.5	
tF (s)			2.7		3.6	3.8
p0 queue free %			99		97	99
cM capacity (veh/h)			1049		626	695

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	225	17	6	325	28
Volume Left	0	0	6	0	22
Volume Right	0	17	0	0	7
cSH	1700	1700	1049	1700	642
Volume to Capacity	0.13	0.01	0.01	0.19	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	8.5	0.0	10.9
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.9
Approach LOS					B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	25.1%	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)	121	1422	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)		3346						3237			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3346						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	1529	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	1671	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)		2624						328			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.50									c0.03	
v/c Ratio		0.64						0.19			0.34	
Uniform Delay, d1		3.3						28.8			29.3	
Progression Factor		1.00						1.00			0.56	
Incremental Delay, d2		1.2						0.3			0.6	
Delay (s)		4.4						29.1			16.9	
Level of Service		A						C			B	
Approach Delay (s)		4.4			0.0			29.1			16.9	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.3	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	57.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1458	76	0	0	0	0	86	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)		3336						1715			1621	
Flt Permitted		1.00						1.00			0.57	
Satd. Flow (perm)		3336						1715			945	
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	1715	89	0	0	0	0	101	145	93	98	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	1819	0	0	0	0	0	235	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)		44.7						16.0			16.0	
Effective Green, g (s)		44.7						16.0			16.0	
Actuated g/C Ratio		0.65						0.23			0.23	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		2171						399			220	
v/s Ratio Prot								0.14				
v/s Ratio Perm		0.55									c0.20	
v/c Ratio		0.84						0.59			0.87	
Uniform Delay, d1		9.2						23.4			25.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.9						2.2			28.3	
Delay (s)		12.1						25.7			53.6	
Level of Service		B						C			D	
Approach Delay (s)		12.1			0.0			25.7			53.6	
Approach LOS		B			A			C			D	

Intersection Summary			
HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	68.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1457	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)		3353						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3353						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	1502	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	1544	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)		37.9						4.6			4.6	
Effective Green, g (s)		38.4						5.1			5.1	
Actuated g/C Ratio		0.75						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)		2500						158			133	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.46									c0.04	
v/c Ratio		0.62						0.19			0.42	
Uniform Delay, d1		3.1						21.3			21.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.5						0.6			2.1	
Delay (s)		3.5						21.9			24.0	
Level of Service		A						C			C	
Approach Delay (s)		3.5			0.0			21.9			24.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	51.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	56	1480	30	0	0	0	0	36	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)	58	1526	31	0	0	0	0	37	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			1557			1680	1657	778	935	1672	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1557			1680	1657	778	935	1672	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 %	96			100			100	60	89	66	50	100
cM capacity (veh/h)	1614			421			36	93	337	133	93	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	821	794	75	92
Volume Left	58	0	0	45
Volume Right	0	31	38	0
cSH	1614	1700	146	109
Volume to Capacity	0.04	0.47	0.51	0.84
Queue Length 95th (ft)	3	0	62	122
Control Delay (s)	1.0	0.0	53.1	119.0
Lane LOS	A		F	F
Approach Delay (s)	0.5		53.1	119.0
Approach LOS			F	F

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	1160	12	0	0	0	0	364	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	3325						3458				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3325						3458				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	1261	13	0	0	0	0	396	10	0	0	0
RTOR Reduction (vph)	47	1	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	63	1273	0	0	0	0	0	403	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	26.4	26.4						11.7				
Effective Green, g (s)	27.4	27.4						12.7				
Actuated g/C Ratio	0.57	0.57						0.26				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	998	1894						913				
v/s Ratio Prot		c0.38						c0.12				
v/s Ratio Perm	0.04											
v/c Ratio	0.06	0.67						0.44				
Uniform Delay, d1	4.6	7.2						14.7				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	1.0						0.3				
Delay (s)	4.6	8.2						15.1				
Level of Service	A	A						B				
Approach Delay (s)		7.9			0.0			15.1			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	48.1	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)	17	1101	71	0	0	0	0	27	455	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					0.87	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1547	1519		1811	
Flt Permitted		1.00	1.00					1.00	1.00		0.63	
Satd. Flow (perm)		2893	1300					1547	1519		1164	
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	1184	76	0	0	0	0	29	489	45	34	0
RTOR Reduction (vph)	0	0	13	0	0	0	0	39	39	0	0	0
Lane Group Flow (vph)	0	1202	63	0	0	0	0	220	220	0	79	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	1%	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)		45.6	45.6					15.4	15.4		15.4	
Effective Green, g (s)		46.1	46.1					15.9	15.9		15.9	
Actuated g/C Ratio		0.66	0.66					0.23	0.23		0.23	
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)		1905	856					351	345		264	
v/s Ratio Prot		c0.42						0.14				
v/s Ratio Perm			0.05						c0.15		0.07	
v/c Ratio		0.63	0.07					0.63	0.64		0.30	
Uniform Delay, d1		7.0	4.3					24.4	24.5		22.4	
Progression Factor		0.44	0.32					1.00	1.00		1.00	
Incremental Delay, d2		1.4	0.2					3.5	3.9		0.6	
Delay (s)		4.5	1.5					27.9	28.3		23.1	
Level of Service		A	A					C	C		C	
Approach Delay (s)		4.4			0.0			28.1			23.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	24	1071	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)		2882						1314			1459	
Flt Permitted		1.00						1.00			0.86	
Satd. Flow (perm)		2882						1314			1278	
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	1127	26	0	0	0	0	13	93	8	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	52	0	0	0	0
Lane Group Flow (vph)	0	1177	0	0	0	0	0	54	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)		54.5						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)		2244						141			137	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.41									0.01	
v/c Ratio		0.52						0.38			0.14	
Uniform Delay, d1		2.9						29.1			28.3	
Progression Factor		0.41						1.00			1.00	
Incremental Delay, d2		0.6						1.7			0.5	
Delay (s)		1.8						30.8			28.8	
Level of Service		A						C			C	
Approach Delay (s)		1.8			0.0			30.8			28.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.4%	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	927	16	0	0	0	0	0	29	294	321	0
Ideal Flow (vphpl)	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	1423	
Flt Permitted		1.00							1.00	0.95	1.00	
Satd. Flow (perm)		2887							1289	1681	1423	
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	976	17	0	0	0	0	0	31	309	338	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	176	4	0
Lane Group Flow (vph)	0	991	0	0	0	0	0	0	4	102	365	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)		28.7							9.5	18.3	18.3	
Effective Green, g (s)		29.2							10.0	18.8	18.8	
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)		1204							184	451	382	
v/s Ratio Prot		c0.34							c0.00	0.06	c0.26	
v/s Ratio Perm												
v/c Ratio		0.82							0.02	0.23	0.95	
Uniform Delay, d1		18.1							25.8	19.9	25.2	
Progression Factor		1.10							1.00	1.00	1.00	
Incremental Delay, d2		5.9							0.2	1.2	35.9	
Delay (s)		25.9							26.0	21.1	61.1	
Level of Service		C							C	C	E	
Approach Delay (s)		25.9			0.0			26.0			43.9	
Approach LOS		C			A			C			D	

Intersection Summary			
HCM Average Control Delay	32.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.4%	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)	8	394	12	0	0	0	0	83	26	469	63	0
Ideal Flow (vphpl)	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						0.97		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2853						1452		1681	1363	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2853						1452		1681	1363	
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	419	13	0	0	0	0	88	28	499	67	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	17	0	0	0	0
Lane Group Flow (vph)	0	438	0	0	0	0	0	99	0	279	287	0
Heavy Vehicles (%)	6%	7%	6%	2%	2%	2%	2%	1%	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)		17.4						8.1		31.0	31.0	
Effective Green, g (s)		17.9						8.6		31.5	31.5	
Actuated g/C Ratio		0.26						0.12		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)		730						178		756	613	
v/s Ratio Prot								c0.07		0.17	c0.21	
v/s Ratio Perm		0.15										
v/c Ratio		0.60						0.56		0.37	0.47	
Uniform Delay, d1		22.9						28.9		12.7	13.4	
Progression Factor		1.00						1.01		1.00	1.00	
Incremental Delay, d2		1.4						3.8		1.4	2.6	
Delay (s)		24.3						32.9		14.1	16.0	
Level of Service		C						C		B	B	
Approach Delay (s)		24.3			0.0			32.9			15.0	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.5%	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	318	0	511	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)		1774		2091		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1774		2091		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	353	0	568	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	353	0	568	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	5%	2%	3%	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)		1319		1555		
v/s Ratio Prot		0.20		c0.27		
v/s Ratio Perm						
v/c Ratio		0.27		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	37.5%	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	971	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			3046			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	1011	24	19	174	0	0	96	258
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	63	0
Lane Group Flow (vph)	0	0	0	0	1048	0	0	193	0	0	291	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)					48.5			12.5			12.5	
Effective Green, g (s)					49.0			13.0			13.0	
Actuated g/C Ratio					0.70			0.19			0.19	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2443			566			556	
v/s Ratio Prot											c0.10	
v/s Ratio Perm					0.30			0.06				
v/c Ratio					0.43			0.34			0.52	
Uniform Delay, d1					4.5			24.8			25.7	
Progression Factor					1.40			1.02			1.00	
Incremental Delay, d2					0.5			0.3			0.9	
Delay (s)					6.8			25.7			26.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.8			25.7			26.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1279	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	1361	20	14	414	0	0	55	296
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	41
Lane Group Flow (vph)	0	0	0	0	1394	0	0	428	0	0	55	255
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					0.42			c0.25				0.16
v/c Ratio					0.68			0.94			0.12	0.58
Uniform Delay, d1					8.9			24.9			19.2	22.1
Progression Factor					0.65			1.00			1.00	1.00
Incremental Delay, d2					1.7			29.3			0.5	5.6
Delay (s)					7.5			54.2			19.7	27.6
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.5			54.2			26.4	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1235	94	35	88	0	0	215	105
Ideal Flow (vphpl)	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		0.99			1.00	
Satd. Flow (prot)					3567	1553		1831			1789	
Flt Permitted					1.00	1.00		0.81			1.00	
Satd. Flow (perm)					3567	1553		1511			1789	
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	1300	99	37	93	0	0	226	111
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	26	0
Lane Group Flow (vph)	0	0	0	0	1346	57	0	130	0	0	311	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	2%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					32.0	32.0		15.6			15.6	
Effective Green, g (s)					32.0	32.0		15.6			15.6	
Actuated g/C Ratio					0.58	0.58		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)					2053	894		424			502	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.38	0.04		0.09				
v/c Ratio					0.66	0.06		0.31			0.62	
Uniform Delay, d1					8.0	5.2		15.7			17.4	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.8	0.0		0.4			2.3	
Delay (s)					8.8	5.2		16.2			19.7	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.6			16.2			19.7	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	55.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	34	1413	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	1503	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	1544	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					0.46			c0.02				
v/c Ratio					0.61			0.37			0.29	
Uniform Delay, d1					2.2			18.6			18.5	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.5			3.1			2.0	
Delay (s)					2.7			21.7			20.5	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.7			21.7			20.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.0%	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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	43	1302	12	58	21	0	0	18	14
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	1431	13	64	23	0	0	20	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1444			0			835	1538	0	1543	1532	722
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1444			0			835	1538	0	1543	1532	722
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			70	79	100	100	83	96
cM capacity (veh/h)	465			1622			212	112	1084	66	114	374

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	763	729	87	35
Volume Left	47	0	64	0
Volume Right	0	13	0	15
cSH	1622	1700	171	164
Volume to Capacity	0.03	0.43	0.51	0.21
Queue Length 95th (ft)	2	0	62	19
Control Delay (s)	0.8	0.0	45.8	32.8
Lane LOS	A		E	D
Approach Delay (s)	0.4		45.8	32.8
Approach LOS			E	D

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	55.3%	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 (vph)	0	0	0	0	1298	2	426	18	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)					3362		1603	1613				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3362		1603	1613				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	1458	2	479	20	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	1460	0	96	97	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					29.8		9.2	9.2				0.7
Effective Green, g (s)					30.8		10.2	10.2				1.7
Actuated g/C Ratio					0.56		0.19	0.19				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)					1893		299	301				50
v/s Ratio Prot					c0.43							
v/s Ratio Perm							0.06	0.06				c0.00
v/c Ratio					0.77		0.32	0.32				0.01
Uniform Delay, d1					9.2		19.3	19.3				25.7
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					2.0		0.6	0.6				0.0
Delay (s)					11.2		19.9	19.9				25.7
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.2			19.9			25.7	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	54.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.9%	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	1315	181	0	87
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	1384	191	0	92
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1384				1384	692
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1384				1384	692
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	76
cM capacity (veh/h)	491				132	382

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	692	692	191	92
Volume Left	0	0	0	0
Volume Right	0	0	191	92
cSH	1700	1700	1700	382
Volume to Capacity	0.41	0.41	0.11	0.24
Queue Length 95th (ft)	0	0	0	23
Control Delay (s)	0.0	0.0	0.0	17.4
Lane LOS				C
Approach Delay (s)	0.0			17.4
Approach LOS				C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	48.4%	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

8/13/2009

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	584	1055	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)	602	1088	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			602	602	602	1690	1690	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			602	602	602	1690	1690	
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)			414	500	412	93	378	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	965	725	9	103
Volume Left	0	0	9	0
Volume Right	363	725	0	0
cSH	1700	1700	412	93
Volume to Capacity	0.57	0.43	0.02	1.10
Queue Length 95th (ft)	0	0	2	171
Control Delay (s)	0.0	0.0	13.9	207.4
Lane LOS			B	F
Approach Delay (s)	0.0		191.4	
Approach LOS			F	

Intersection Summary			
Average Delay	11.9		
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	91	0	0	1177	0	491
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)	1787			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1787			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	99	0	0	1279	0	534
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	99	0	0	1279	0	534
Heavy Vehicles (%)	1%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	15.4			45.9		70.3
Effective Green, g (s)	15.9			46.4		70.3
Actuated g/C Ratio	0.23			0.66		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	404			2313		2787
v/s Ratio Prot	c0.06			c0.36		
v/s Ratio Perm						c0.19
v/c Ratio	0.25			0.55		0.19
Uniform Delay, d1	22.3			6.4		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	22.4			7.3		0.1
Level of Service	C			A		A
Approach Delay (s)	22.4			7.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	4.0
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	605	611	491	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			0.38	1.00	1.00	
Satd. Flow (perm)			676	1845	3468	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	630	636	511	39
RTOR Reduction (vph)	0	0	0	0	5	0
Lane Group Flow (vph)	0	0	630	636	545	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)			51.0	55.5	27.2	
Effective Green, g (s)			52.0	56.0	27.7	
Actuated g/C Ratio			0.74	0.80	0.39	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			852	1470	1366	
v/s Ratio Prot			c0.26	0.34	0.16	
v/s Ratio Perm			c0.29			
v/c Ratio			0.74	0.43	0.40	
Uniform Delay, d1			4.4	2.2	15.3	
Progression Factor			0.48	0.13	1.00	
Incremental Delay, d2			2.5	0.8	0.1	
Delay (s)			4.6	1.0	15.4	
Level of Service			A	A	B	
Approach Delay (s)	0.0			2.8	15.4	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	18.3
Intersection Capacity Utilization	54.9%	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

8/13/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	1139	241	0	0	0	22	0	338	133	0	0	0
Ideal Flow (vphpl)	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		0.96				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1633	1670				1277		2562				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1633	1670				1277		2562				
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)	1225	259	0	0	0	24	0	363	143	0	0	0
RTOR Reduction (vph)	262	70	0	0	0	24	0	56	0	0	0	0
Lane Group Flow (vph)	473	679	0	0	0	0	0	451	0	0	0	0
Heavy Vehicles (%)	5%	4%	2%	0%	0%	3%	0%	13%	19%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	38.3	38.3				2.0		17.7				
Effective Green, g (s)	38.8	38.8				1.0		18.2				
Actuated g/C Ratio	0.55	0.55				0.01		0.26				
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)	905	926				18		666				
v/s Ratio Prot								c0.18				
v/s Ratio Perm	0.29	0.41				c0.00						
v/c Ratio	0.52	0.73				0.02		0.68				
Uniform Delay, d1	9.8	11.7				34.0		23.3				
Progression Factor	0.65	0.16				1.00		1.00				
Incremental Delay, d2	1.1	2.6				0.2		2.7				
Delay (s)	7.4	4.4				34.2		26.0				
Level of Service	A	A				C		C				
Approach Delay (s)		5.9			34.2			26.0			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	11.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.1%	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

8/13/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	22	0	0	176	18	34	1472	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			4887				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1270			1645			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	23	0	0	185	19	36	1549	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	1591	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	15%	5%	5%	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)		13.8			13.8			47.2				
Effective Green, g (s)		14.3			14.3			47.7				
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)		259			336			3330				
v/s Ratio Prot					c0.12							
v/s Ratio Perm		0.03						0.33				
v/c Ratio		0.15			0.59			0.48				
Uniform Delay, d1		22.9			25.2			5.3				
Progression Factor		1.07			1.00			0.65				
Incremental Delay, d2		0.3			2.6			0.4				
Delay (s)		24.9			27.8			3.8				
Level of Service		C			C			A				
Approach Delay (s)		24.9			27.8			3.8			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.9	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	51.3%	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

8/13/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	92	147	0	0	83	116	53	1530	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			1712	1504		4520				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1240			1712	1504		4520				
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	87	122	56	1611	111	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	21	0	10	0	0	0	0
Lane Group Flow (vph)	0	252	0	0	96	77	0	1768	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	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)		319			440	387		2841				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.39				
v/c Ratio		0.79			0.22	0.20		0.62				
Uniform Delay, d1		24.2			20.5	20.4		7.9				
Progression Factor		0.96			1.00	1.00		2.17				
Incremental Delay, d2		11.5			0.3	0.3		1.0				
Delay (s)		34.7			20.7	20.6		18.2				
Level of Service		C			C	C		B				
Approach Delay (s)		34.7			20.7			18.2			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.5%	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

8/13/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	78	31	0	0	73	32	28	1525	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	1753	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	126	0	0	105	0	0	1834	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			0.59				
Uniform Delay, d1		26.4			25.4			5.0				
Progression Factor		1.60			1.00			0.25				
Incremental Delay, d2		2.8			0.7			0.7				
Delay (s)		45.2			26.0			1.9				
Level of Service		D			C			A				
Approach Delay (s)		45.2			26.0			1.9			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.0	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	50.3%	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)	238	26	0	0	32	18	43	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	46	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	1891	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)		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						0.43				
v/c Ratio		0.88			0.10			0.74				
Uniform Delay, d1		23.2			17.6			10.7				
Progression Factor		0.67			1.00			0.63				
Incremental Delay, d2		22.4			0.1			1.6				
Delay (s)		38.0			17.7			8.3				
Level of Service		D			B			A				
Approach Delay (s)		38.0			17.7			8.3			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	62.4%	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)	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			0.25				
Incremental Delay, d2		3.1			0.1			0.5				
Delay (s)		26.4			26.7			1.5				
Level of Service		C			C			A				
Approach Delay (s)		26.4			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	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			0.95						0.67	
Incremental Delay, d2		1.7			2.8						0.5	
Delay (s)		29.8			29.9						2.7	
Level of Service		C			C						A	
Approach Delay (s)		29.8			29.9			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	36	25	57	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)		1451			1468						4407	
Flt Permitted		1.00			0.87						1.00	
Satd. Flow (perm)		1451			1300						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	39	27	62	0	0	0	0	10	1420	86
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	185	0	0	89	0	0	0	0	0	1509	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)		14.1			14.1						45.9	
Effective Green, g (s)		14.6			14.6						47.4	
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)		303			271						2984	
v/s Ratio Prot		c0.13										
v/s Ratio Perm					0.07						0.34	
v/c Ratio		0.61			0.33						0.51	
Uniform Delay, d1		25.1			23.5						5.5	
Progression Factor		1.00			1.04						0.24	
Incremental Delay, d2		3.6			0.7						0.6	
Delay (s)		28.7			25.2						1.9	
Level of Service		C			C						A	
Approach Delay (s)		28.7			25.2			0.0			1.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.5%	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

8/13/2009

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	1321	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	1436	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	1483	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						0.33	
v/c Ratio		0.48			0.38						0.44	
Uniform Delay, d1		28.2			27.9						3.1	
Progression Factor		1.00			0.52						0.21	
Incremental Delay, d2		1.9			1.3						0.4	
Delay (s)		30.1			15.9						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.1			15.9			0.0			1.0	
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	43.1%	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	15	58	74	0	0	0	0	133	1182	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			1823						4572	
Flt Permitted		1.00			0.83						1.00	
Satd. Flow (perm)		1831			1555						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	16	61	78	0	0	0	0	140	1244	33
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	121	0	0	139	0	0	0	0	0	1413	0
Heavy Vehicles (%)	2%	2%	2%	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)		536			455						2711	
v/s Ratio Prot		0.07										
v/s Ratio Perm					c0.09						0.31	
v/c Ratio		0.23			0.31						0.52	
Uniform Delay, d1		18.7			19.2						8.4	
Progression Factor		1.00			0.96						0.83	
Incremental Delay, d2		1.0			1.6						0.7	
Delay (s)		19.7			20.0						7.7	
Level of Service		B			C						A	
Approach Delay (s)		19.7			20.0			0.0			7.7	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.6	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	49.8%	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	169	0	0	0	0	22	344	902
Ideal Flow (vphpl)	1900	1900	1900	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					0.99						1.00	1.00
Satd. Flow (prot)					1331						2487	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1331						2487	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	180	0	0	0	0	23	366	960
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	172	172
Lane Group Flow (vph)	0	0	0	0	210	0	0	0	0	0	697	308
Heavy Vehicles (%)	2%	2%	2%	64%	5%	2%	2%	2%	2%	0%	13%	5%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					16.6						44.4	44.4
Effective Green, g (s)					17.1						44.9	44.9
Actuated g/C Ratio					0.24						0.64	0.64
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					325						1595	898
v/s Ratio Prot												
v/s Ratio Perm					0.16						0.28	0.22
v/c Ratio					0.65						0.44	0.34
Uniform Delay, d1					23.7						6.3	5.8
Progression Factor					0.82						0.49	1.24
Incremental Delay, d2					4.2						0.8	0.9
Delay (s)					23.6						3.8	8.1
Level of Service					C						A	A
Approach Delay (s)		0.0			23.6			0.0			5.3	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	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	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)	0	1323	23	0	0	0	0	0	0	19	332	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)		3113									2594	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3113									2594	
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	1521	26	0	0	0	0	0	0	22	382	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	1546	0	0	0	0	0	0	0	0	400	0
Heavy Vehicles (%)	0%	4%	10%	2%	2%	2%	2%	2%	2%	0%	19%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		40.0									21.0	
Effective Green, g (s)		40.5									21.5	
Actuated g/C Ratio		0.58									0.31	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1801									797	
v/s Ratio Prot		c0.50										
v/s Ratio Perm											0.15	
v/c Ratio		0.86									0.50	
Uniform Delay, d1		12.3									19.9	
Progression Factor		0.75									1.41	
Incremental Delay, d2		4.5									0.4	
Delay (s)		13.7									28.5	
Level of Service		B									C	
Approach Delay (s)		13.7			0.0			0.0			28.5	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.1%	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)	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						1.82	2.04			
Incremental Delay, d2		1.1						4.7	2.3			
Delay (s)		20.8						25.1	18.5			
Level of Service		C						C	B			
Approach Delay (s)		20.8			0.0			23.7			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	22.9	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

8/13/2009

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

8/13/2009

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

8/13/2009

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

8/13/2009

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		

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)	568	1	3	513	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)	611	1	3	552	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			612		1169	611
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			612		1169	611
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		94	99
cM capacity (veh/h)			939		171	416

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	612	555	12
Volume Left	0	3	10
Volume Right	1	0	2
cSH	1700	939	192
Volume to Capacity	0.36	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	25.0
Lane LOS		A	C
Approach Delay (s)	0.0	0.1	25.0
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	561	0	2	539	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	610	0	2	586	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	598			613			1239	1234	615	1229	1229	593
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	598			613			1239	1234	615	1229	1229	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			100			100	99	100	93	99	98
cM capacity (veh/h)	964			950			147	175	493	149	172	497

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	620	599	1	21
Volume Left	10	2	0	10
Volume Right	0	11	0	9
cSH	964	950	175	215
Volume to Capacity	0.01	0.00	0.01	0.10
Queue Length 95th (ft)	1	0	0	8
Control Delay (s)	0.3	0.1	25.7	23.5
Lane LOS	A	A	D	C
Approach Delay (s)	0.3	0.1	25.7	23.5
Approach LOS			D	C

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	564	1	1	534	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	613	1	1	580	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	582			614			1200	1199	614	1200	1199	581
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	582			614			1200	1199	614	1200	1199	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			100			99	100	100	99	100	100
cM capacity (veh/h)	978			951			161	185	492	161	185	514

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	615	583	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	978	951	243	245
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	20.0	19.8
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	20.0	19.8
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	40.5%	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)	47	477	35	10	477	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	524	38	11	524	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	538			563			1235	1207	545	1206	1220	533
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	538			563			1235	1207	545	1206	1220	533
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
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 %	95			99			95	99	100	88	99	94
cM capacity (veh/h)	1013			975			137	173	541	150	169	545

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	614	547	11	54
Volume Left	52	11	7	19
Volume Right	38	12	2	34
cSH	1013	975	170	278
Volume to Capacity	0.05	0.01	0.06	0.19
Queue Length 95th (ft)	4	1	5	18
Control Delay (s)	1.3	0.3	27.7	21.0
Lane LOS	A	A	D	C
Approach Delay (s)	1.3	0.3	27.7	21.0
Approach LOS			D	C

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	497	0	0	27	498
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	541
Pedestrians						
Lane Width (ft)						
Walking Speed (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	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600	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)			455	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	540	29	541
Volume Left	0	29	0
Volume Right	540	0	0
cSH	1700	1578	1700
Volume to Capacity	0.32	0.02	0.32
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.4	
Approach LOS			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	510	5	0	16	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	18	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	89	100	100
cM capacity (veh/h)	1585		146	158	162	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	374	192	18
Volume Left	374	187	0
Volume Right	0	5	0
cSH	1585	1585	158
Volume to Capacity	0.35	0.35	0.11
Queue Length 95th (ft)	41	41	9
Control Delay (s)	8.5	8.4	30.5
Lane LOS	A	A	D
Approach Delay (s)	8.5		30.5
Approach LOS			D

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	24.7%	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)	22	3	0	0	172	8	12	502	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	570	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	419	622	0	611	610	297	0			594		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	419	622	0	611	610	297	0			594		
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 %	92	99	100	100	52	99	99			100		
cM capacity (veh/h)	319	402	1091	375	406	702	1600			978		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	28	205	299	309
Volume Left	25	0	14	0
Volume Right	0	9	0	24
cSH	327	414	1600	1700
Volume to Capacity	0.09	0.49	0.01	0.18
Queue Length 95th (ft)	7	66	1	0
Control Delay (s)	17.0	21.9	0.4	0.0
Lane LOS	C	C	A	
Approach Delay (s)	17.0	21.9	0.2	
Approach LOS	C	C		

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/13/2009

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	516	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	538	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	290	553	2	556	551	271	0			543		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	290	553	2	556	551	271	0			543		
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 %	99	99	100	100	96	100	100			100		
cM capacity (veh/h)	624	442	1086	412	444	733	1593			1022		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	15	19	274	274
Volume Left	8	0	5	0
Volume Right	0	2	0	5
cSH	530	464	1593	1700
Volume to Capacity	0.03	0.04	0.00	0.16
Queue Length 95th (ft)	2	3	0	0
Control Delay (s)	12.0	13.1	0.2	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	13.1	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		0.8		
Intersection Capacity Utilization		29.0%	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)	10	6	0	0	92	9	19	480	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	22	558	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	390	616	4	614	613	287	3			569		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	390	616	4	614	613	287	3			569		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.3			2.2		
p0 queue free %	97	98	100	100	71	98	99			100		
cM capacity (veh/h)	375	362	1019	329	363	657	1571			996		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	117	301	286
Volume Left	12	0	22	0
Volume Right	0	10	0	7
cSH	370	378	1571	1700
Volume to Capacity	0.05	0.31	0.01	0.17
Queue Length 95th (ft)	4	32	1	0
Control Delay (s)	15.3	18.7	0.7	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.3	18.7	0.3	
Approach LOS	C	C		

Intersection Summary				
Average Delay		3.7		
Intersection Capacity Utilization		31.7%	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	12	3	86	23	0	0	0	0	3	340	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	4	102	27	0	0	0	0	4	405	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	0.94	0.94	0.94	0.94	0.94		0.94					
vC, conflicting volume	434	427	211	227	433	7	418			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	271	263	33	51	269	7	254			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	4.1	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	95	100	100			100		
cM capacity (veh/h)	563	569	931	844	583	1055	1227			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	130	206	213
Volume Left	0	102	4	0
Volume Right	4	0	0	11
cSH	617	772	1541	1700
Volume to Capacity	0.03	0.17	0.00	0.13
Queue Length 95th (ft)	2	15	0	0
Control Delay (s)	11.0	10.6	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.0	10.6	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.8		
Intersection Capacity Utilization		31.3%	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	12	2	16	11	0	0	0	0	10	402	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	432	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	469	461	225	249	468	4	445			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	469	461	225	249	468	4	445			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	98	100	100			99		
cM capacity (veh/h)	469	496	785	669	492	1080	1111			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	227	229
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	524	584	1576	1700
Volume to Capacity	0.03	0.05	0.01	0.13
Queue Length 95th (ft)	2	4	1	0
Control Delay (s)	12.1	11.5	0.4	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.1	11.5	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization		30.4%	ICU Level of Service	A
Analysis Period (min)		15		

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	356	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	379	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	449			0			464	441	226	236	477	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	449			0			464	441	226	236	477	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	94	100	80	91	100
cM capacity (veh/h)	1108			1565			449	509	783	662	484	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	203	260	33	176
Volume Left	14	0	0	131
Volume Right	0	70	1	0
cSH	1565	1700	514	605
Volume to Capacity	0.01	0.15	0.06	0.29
Queue Length 95th (ft)	1	0	5	30
Control Delay (s)	0.6	0.0	12.5	13.4
Lane LOS	A		B	B
Approach Delay (s)	0.2		12.5	13.4
Approach LOS			B	B

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
362: S Division Street & W Heron Street

8/13/2009

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	0	0	0	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	0	0	0	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	49			29			70	78	49	70	70	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	49			29			70	78	49	70	70	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)	1558			1584			922	658	1020	908	810	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	49	0	5
Volume Left	0	0	0	5
Volume Right	17	0	0	0
cSH	1558	1584	1700	908
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	0.0	9.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	9.0
Approach LOS			A	A

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	13.3%	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	44	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	48	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	61	48	49			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	48	49			
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)	944	1020	1571			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	49
Volume Left	1	1	0
Volume Right	1	0	1
cSH	981	1571	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		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	35	400	4	4	446	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	460	5	5	513	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	513			464			1114	1064	462	1073	1070	516
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	513			464			1114	1064	462	1073	1070	516
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			88	98	99	97	100	91
cM capacity (veh/h)	1008			1108			157	205	581	180	204	542

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	40	464	5	520	28	55
Volume Left	40	0	5	0	18	6
Volume Right	0	5	0	7	6	49
cSH	1008	1700	1108	1700	191	448
Volume to Capacity	0.04	0.27	0.00	0.31	0.14	0.12
Queue Length 95th (ft)	3	0	0	0	12	10
Control Delay (s)	8.7	0.0	8.3	0.0	27.0	14.2
Lane LOS	A		A		D	B
Approach Delay (s)	0.7		0.1		27.0	14.2
Approach LOS					D	B

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	41.3%	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)	17	339	10	15	396	100	9	14	39	53	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	368	11	16	430	109	10	15	42	58	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	539			379			961	983	374	978	934	485
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	539			379			961	983	374	978	934	485
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	93	71	97	95
cM capacity (veh/h)	990			1137			204	230	646	199	258	584

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	398	555	67	93
Volume Left	18	16	10	58
Volume Right	11	109	42	29
cSH	990	1137	375	257
Volume to Capacity	0.02	0.01	0.18	0.36
Queue Length 95th (ft)	1	1	16	40
Control Delay (s)	0.6	0.4	16.7	26.9
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	16.7	26.9
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	293	2	4	0	287	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	329	2	4	0	322	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	322			331			362	684	330	411	363	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	322			331			362	684	330	411	363	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	90	95	100	100	100
cM capacity (veh/h)	1210			591			586	365	711	480	555	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	331	4	322	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	322	33
cSH	1210	1700	591	1700	475
Volume to Capacity	0.01	0.19	0.01	0.19	0.14
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.0	0.0	11.1	0.0	13.9
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.2		13.9
Approach LOS					B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

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

8/13/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	82	0	58	0	0	0	31	85	120	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)	96	0	68	0	0	0	36	100	141	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			68		246	261	0	345	227	34
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			68		246	261	0	345	227	34
tC, single (s)	4.2			4.1		7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	94			100		100	94	91	72	94	100
cM capacity (veh/h)	1566			1533		639	599	1068	505	634	1045

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	165	0	136	179
Volume Left	96	0	0	141
Volume Right	68	0	100	0
cSH	1566	1700	883	528
Volume to Capacity	0.06	0.00	0.15	0.34
Queue Length 95th (ft)	5	0	14	37
Control Delay (s)	4.6	0.0	9.8	15.3
Lane LOS	A		A	C
Approach Delay (s)	4.6	0.0	9.8	15.3
Approach LOS			A	C

Intersection Summary			
Average Delay	10.1		
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	54	151	148	43	97	281
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	59	164	161	47	105	305
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			223		509	141
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			223		509	141
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			88		77	67
cM capacity (veh/h)			1358		460	912

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	223	208	411
Volume Left	0	161	105
Volume Right	164	0	305
cSH	1700	1358	729
Volume to Capacity	0.13	0.12	0.56
Queue Length 95th (ft)	0	10	89
Control Delay (s)	0.0	6.4	16.1
Lane LOS		A	C
Approach Delay (s)	0.0	6.4	16.1
Approach LOS			C

Intersection Summary			
Average Delay	9.5		
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	0	1	0	0	1	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1	0	0	1	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1		1	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1		1	1
tC, single (s)			4.1		7.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.4	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1622		818	1084

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	1	0	1
Volume Left	0	0	1
Volume Right	1	0	0
cSH	1700	1700	818
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	9.4
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	343	34	15	443	31	48	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		0.99			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.96	1.00		0.97	
Satd. Flow (prot)		1746			1828			1794	1538		1749	
Flt Permitted		0.99			0.99			0.72	1.00		0.78	
Satd. Flow (perm)		1723			1804			1342	1538		1408	
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	369	37	16	476	33	52	9	27	34	9	14
RTOR Reduction (vph)	0	3	0	0	2	0	0	0	22	0	12	0
Lane Group Flow (vph)	0	415	0	0	523	0	0	61	5	0	45	0
Heavy Vehicles (%)	7%	8%	1%	2%	3%	2%	1%	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)		22.6			22.6			6.2	6.2		6.2	
Effective Green, g (s)		23.1			23.1			6.7	6.7		6.7	
Actuated g/C Ratio		0.61			0.61			0.18	0.18		0.18	
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)		1053			1102			238	273		250	
v/s Ratio Prot												
v/s Ratio Perm		0.24			c0.29			c0.05	0.00		0.03	
v/c Ratio		0.39			0.47			0.26	0.02		0.18	
Uniform Delay, d1		3.8			4.0			13.4	12.8		13.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.6	0.0		0.4	
Delay (s)		4.0			4.4			14.0	12.9		13.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		4.0			4.4			13.6			13.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	37.8	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)	213	15	6	286	19	7
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)	242	17	7	325	22	8
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			259		581	242
vC1, stage 1 conf vol					242	
vC2, stage 2 conf vol					339	
vCu, unblocked vol			259		581	242
tC, single (s)			4.8		6.5	6.8
tC, 2 stage (s)					5.5	
tF (s)			2.8		3.6	3.9
p0 queue free %			99		97	99
cM capacity (veh/h)			1006		618	668

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	242	17	7	325	30
Volume Left	0	0	7	0	22
Volume Right	0	17	0	0	8
cSH	1700	1700	1006	1700	631
Volume to Capacity	0.14	0.01	0.01	0.19	0.05
Queue Length 95th (ft)	0	0	1	0	4
Control Delay (s)	0.0	0.0	8.6	0.0	11.0
Lane LOS			A		B
Approach Delay (s)	0.0		0.2		11.0
Approach LOS					B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	25.1%	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)	121	1423	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)		3346						3237			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3346						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	1530	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	1672	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)		2624						328			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.50									c0.03	
v/c Ratio		0.64						0.19			0.34	
Uniform Delay, d1		3.3						28.8			29.3	
Progression Factor		1.00						1.00			0.54	
Incremental Delay, d2		1.2						0.3			0.6	
Delay (s)		4.4						29.1			16.3	
Level of Service		A						C			B	
Approach Delay (s)		4.4			0.0			29.1			16.3	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.3	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	57.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1459	76	0	0	0	0	90	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)		3336						1717			1621	
Flt Permitted		1.00						1.00			0.56	
Satd. Flow (perm)		3336						1717			931	
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	1716	89	0	0	0	0	106	145	93	98	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	1819	0	0	0	0	0	240	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)		44.7						16.1			16.1	
Effective Green, g (s)		44.7						16.1			16.1	
Actuated g/C Ratio		0.65						0.23			0.23	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		2167						402			218	
v/s Ratio Prot								0.14				
v/s Ratio Perm		0.55									c0.21	
v/c Ratio		0.84						0.60			0.88	
Uniform Delay, d1		9.3						23.5			25.4	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		3.0						2.4			30.1	
Delay (s)		12.3						25.9			55.4	
Level of Service		B						C			E	
Approach Delay (s)		12.3			0.0			25.9			55.4	
Approach LOS		B			A			C			E	

Intersection Summary			
HCM Average Control Delay	17.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	68.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1458	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)		3353						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3353						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	1503	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	1545	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)		37.9						4.6			4.6	
Effective Green, g (s)		38.4						5.1			5.1	
Actuated g/C Ratio		0.75						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)		2500						158			133	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.46									c0.04	
v/c Ratio		0.62						0.19			0.42	
Uniform Delay, d1		3.1						21.3			21.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.5						0.6			2.1	
Delay (s)		3.6						21.9			24.0	
Level of Service		A						C			C	
Approach Delay (s)		3.6			0.0			21.9			24.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	51.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	56	1481	30	0	0	0	0	40	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)	58	1527	31	0	0	0	0	41	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			1558			1681	1658	779	938	1673	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1558			1681	1658	779	938	1673	0
tC, single (s)	4.2			4.1			7.6	6.5	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 %	96			100			100	56	89	64	50	100
cM capacity (veh/h)	1614			421			36	93	337	126	93	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	821	794	79	92
Volume Left	58	0	0	45
Volume Right	0	31	38	0
cSH	1614	1700	143	107
Volume to Capacity	0.04	0.47	0.56	0.86
Queue Length 95th (ft)	3	0	69	125
Control Delay (s)	1.0	0.0	57.8	125.4
Lane LOS	A		F	F
Approach Delay (s)	0.5		57.8	125.4
Approach LOS			F	F

Intersection Summary			
Average Delay	9.4		
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	1161	12	0	0	0	0	364	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	3325						3458				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3325						3458				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	1262	13	0	0	0	0	396	10	0	0	0
RTOR Reduction (vph)	47	1	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	63	1274	0	0	0	0	0	403	0	0	0	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	26.4	26.4						11.7				
Effective Green, g (s)	27.4	27.4						12.7				
Actuated g/C Ratio	0.57	0.57						0.26				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	998	1894						913				
v/s Ratio Prot		c0.38						c0.12				
v/s Ratio Perm	0.04											
v/c Ratio	0.06	0.67						0.44				
Uniform Delay, d1	4.6	7.2						14.7				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	1.0						0.3				
Delay (s)	4.6	8.2						15.1				
Level of Service	A	A						B				
Approach Delay (s)		7.9			0.0			15.1			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	48.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.9%	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)	17	1102	71	0	0	0	0	27	455	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					0.87	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1547	1519		1811	
Flt Permitted		1.00	1.00					1.00	1.00		0.63	
Satd. Flow (perm)		2893	1300					1547	1519		1164	
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	1185	76	0	0	0	0	29	489	45	34	0
RTOR Reduction (vph)	0	0	13	0	0	0	0	38	38	0	0	0
Lane Group Flow (vph)	0	1203	63	0	0	0	0	221	221	0	79	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	1%	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)		45.6	45.6					15.4	15.4		15.4	
Effective Green, g (s)		46.1	46.1					15.9	15.9		15.9	
Actuated g/C Ratio		0.66	0.66					0.23	0.23		0.23	
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)		1905	856					351	345		264	
v/s Ratio Prot		c0.42						0.14				
v/s Ratio Perm			0.05						c0.15		0.07	
v/c Ratio		0.63	0.07					0.63	0.64		0.30	
Uniform Delay, d1		7.0	4.3					24.4	24.5		22.4	
Progression Factor		0.44	0.33					1.00	1.00		1.00	
Incremental Delay, d2		1.4	0.2					3.7	4.0		0.6	
Delay (s)		4.5	1.5					28.1	28.5		23.1	
Level of Service		A	A					C	C		C	
Approach Delay (s)		4.4			0.0			28.3			23.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	24	1072	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)		2882						1314			1459	
Flt Permitted		1.00						1.00			0.86	
Satd. Flow (perm)		2882						1314			1278	
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	1128	26	0	0	0	0	13	93	8	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	52	0	0	0	0
Lane Group Flow (vph)	0	1178	0	0	0	0	0	54	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)		54.5						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)		2244						141			137	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.41									0.01	
v/c Ratio		0.52						0.38			0.14	
Uniform Delay, d1		2.9						29.1			28.3	
Progression Factor		0.41						1.00			1.00	
Incremental Delay, d2		0.6						1.7			0.5	
Delay (s)		1.8						30.8			28.8	
Level of Service		A						C			C	
Approach Delay (s)		1.8			0.0			30.8			28.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.4%	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	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	27	176	4	0
Lane Group Flow (vph)	0	992	0	0	0	0	0	0	4	102	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)		28.7							9.5	18.3	18.3	
Effective Green, g (s)		29.2							10.0	18.8	18.8	
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)		1204							184	451	382	
v/s Ratio Prot		c0.34							c0.00	0.06	c0.34	
v/s Ratio Perm												
v/c Ratio		0.82							0.02	0.23	1.25	
Uniform Delay, d1		18.1							25.8	19.9	25.6	
Progression Factor		1.09							1.00	1.00	1.00	
Incremental Delay, d2		5.9							0.2	1.2	134.5	
Delay (s)		25.8							26.0	21.1	160.1	
Level of Service		C							C	C	F	
Approach Delay (s)		25.8			0.0			26.0			109.3	
Approach LOS		C			A			C			F	

Intersection Summary			
HCM Average Control Delay	61.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.83		
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			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	8	395	12	0	0	0	0	83	26	469	78	0
Ideal Flow (vphpl)	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						0.97		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.97	
Satd. Flow (prot)		2854						1452		1681	1371	
Flt Permitted		1.00						1.00		0.95	0.97	
Satd. Flow (perm)		2854						1452		1681	1371	
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	420	13	0	0	0	0	88	28	499	83	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	17	0	0	0	0
Lane Group Flow (vph)	0	439	0	0	0	0	0	99	0	289	293	0
Heavy Vehicles (%)	6%	7%	6%	2%	2%	2%	2%	1%	2%	2%	1%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		17.4						8.1		31.0	31.0	
Effective Green, g (s)		17.9						8.6		31.5	31.5	
Actuated g/C Ratio		0.26						0.12		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)		730						178		756	617	
v/s Ratio Prot								c0.07		0.17	c0.21	
v/s Ratio Perm		0.15										
v/c Ratio		0.60						0.56		0.38	0.47	
Uniform Delay, d1		22.9						28.9		12.8	13.5	
Progression Factor		1.00						1.01		1.00	1.00	
Incremental Delay, d2		1.4						3.8		1.5	2.6	
Delay (s)		24.3						32.9		14.3	16.1	
Level of Service		C						C		B	B	
Approach Delay (s)		24.3			0.0			32.9			15.2	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
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	319	0	512	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)		1774		2091		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1774		2091		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	354	0	569	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	354	0	569	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	5%	2%	3%	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)		1319		1555		
v/s Ratio Prot		0.20		c0.27		
v/s Ratio Perm						
v/c Ratio		0.27		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	37.6%	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	13	1037	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)					3491			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3491			3048			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	1080	24	19	174	0	0	96	258
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	51	0
Lane Group Flow (vph)	0	0	0	0	1117	0	0	193	0	0	303	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)					48.2			12.8			12.8	
Effective Green, g (s)					48.7			13.3			13.3	
Actuated g/C Ratio					0.70			0.19			0.19	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2429			579			569	
v/s Ratio Prot											c0.10	
v/s Ratio Perm					0.32			0.06				
v/c Ratio					0.46			0.33			0.53	
Uniform Delay, d1					4.8			24.5			25.5	
Progression Factor					1.44			1.03			1.00	
Incremental Delay, d2					0.6			0.3			1.0	
Delay (s)					7.4			25.5			26.5	
Level of Service					A			C			C	
Approach Delay (s)		0.0			7.4			25.5			26.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.1%	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	14	1345	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)					3354			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3354			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	1431	20	14	414	0	0	55	296
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	35
Lane Group Flow (vph)	0	0	0	0	1464	0	0	428	0	0	55	261
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					0.44			c0.25				0.16
v/c Ratio					0.71			0.94			0.12	0.60
Uniform Delay, d1					9.2			24.9			19.2	22.2
Progression Factor					0.71			1.00			1.00	1.00
Incremental Delay, d2					2.0			29.3			0.5	5.9
Delay (s)					8.5			54.2			19.7	28.0
Level of Service					A			D			B	C
Approach Delay (s)		0.0			8.5			54.2			26.7	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	20.1	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	86.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1323	94	38	88	0	0	215	112
Ideal Flow (vphpl)	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			0.95	
Flt Protected					1.00	1.00		0.99			1.00	
Satd. Flow (prot)					3568	1553		1829			1786	
Flt Permitted					1.00	1.00		0.77			1.00	
Satd. Flow (perm)					3568	1553		1431			1786	
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	1393	99	40	93	0	0	226	118
RTOR Reduction (vph)	0	0	0	0	0	41	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1439	58	0	133	0	0	320	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	2%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					33.8	33.8		16.3			16.3	
Effective Green, g (s)					33.8	33.8		16.3			16.3	
Actuated g/C Ratio					0.58	0.58		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)					2076	903		401			501	
v/s Ratio Prot											c0.18	
v/s Ratio Perm					0.40	0.04		0.09				
v/c Ratio					0.69	0.06		0.33			0.64	
Uniform Delay, d1					8.5	5.3		16.6			18.3	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					1.0	0.0		0.5			2.7	
Delay (s)					9.5	5.3		17.1			21.0	
Level of Service					A	A		B			C	
Approach Delay (s)		0.0			9.3			17.1			21.0	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	58.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	34	1516	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	1613	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	1654	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					0.50			c0.02				
v/c Ratio					0.66			0.37			0.29	
Uniform Delay, d1					2.4			18.6			18.5	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.6			3.1			2.0	
Delay (s)					3.0			21.7			20.5	
Level of Service					A			C			C	
Approach Delay (s)		0.0			3.0			21.7			20.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	43	1405	12	62	21	0	0	18	17
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	1544	13	68	23	0	0	20	19
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1557			0			895	1652	0	1657	1645	779
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1557			0			895	1652	0	1657	1645	779
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			63	76	100	100	80	95
cM capacity (veh/h)	421			1622			184	96	1084	52	98	343

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	819	785	91	38
Volume Left	47	0	68	0
Volume Right	0	13	0	19
cSH	1622	1700	149	150
Volume to Capacity	0.03	0.46	0.61	0.26
Queue Length 95th (ft)	2	0	81	24
Control Delay (s)	0.8	0.0	61.2	37.2
Lane LOS	A		F	E
Approach Delay (s)	0.4		61.2	37.2
Approach LOS			F	E

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	58.3%	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 (vph)	0	0	0	0	1407	2	426	18	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)					3362		1603	1613				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3362		1603	1613				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	1581	2	479	20	0	0	0	9
RTOR Reduction (vph)	0	0	0	0	0	0	150	150	0	0	0	9
Lane Group Flow (vph)	0	0	0	0	1583	0	99	100	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					34.4		9.3	9.3				0.8
Effective Green, g (s)					35.4		10.3	10.3				1.8
Actuated g/C Ratio					0.59		0.17	0.17				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)					2000		277	279				49
v/s Ratio Prot					c0.47							
v/s Ratio Perm							0.06	0.06				c0.00
v/c Ratio					0.79		0.36	0.36				0.01
Uniform Delay, d1					9.2		21.7	21.7				28.0
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					2.2		0.8	0.8				0.0
Delay (s)					11.4		22.5	22.5				28.0
Level of Service					B		C	C				C
Approach Delay (s)		0.0			11.4			22.5			28.0	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1424	181	0	87
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	1499	191	0	92
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1499				1499	749
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1499				1499	749
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)	443				111	350

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	749	749	191	92
Volume Left	0	0	0	0
Volume Right	0	0	191	92
cSH	1700	1700	1700	350
Volume to Capacity	0.44	0.44	0.11	0.26
Queue Length 95th (ft)	0	0	0	26
Control Delay (s)	0.0	0.0	0.0	18.9
Lane LOS				C
Approach Delay (s)	0.0			18.9
Approach LOS				C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	692	1056	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)	713	1089	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			713	713	713	1802	1802	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			713	713	713	1802	1802	
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	97	0	100	
cM capacity (veh/h)			357	432	347	80	342	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	1076	726	9	103
Volume Left	0	0	9	0
Volume Right	363	726	0	0
cSH	1700	1700	347	80
Volume to Capacity	0.63	0.43	0.03	1.30
Queue Length 95th (ft)	0	0	2	196
Control Delay (s)	0.0	0.0	15.7	292.3
Lane LOS			C	F
Approach Delay (s)	0.0		269.4	
Approach LOS			F	

Intersection Summary			
Average Delay	15.8		
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	91	0	0	1178	0	506
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)	1787			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1787			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	99	0	0	1280	0	550
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	99	0	0	1280	0	550
Heavy Vehicles (%)	1%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	15.4			46.4		70.8
Effective Green, g (s)	15.9			46.9		70.8
Actuated g/C Ratio	0.22			0.66		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	401			2322		2787
v/s Ratio Prot	c0.06			c0.37		
v/s Ratio Perm						c0.20
v/c Ratio	0.25			0.55		0.20
Uniform Delay, d1	22.5			6.4		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.2
Delay (s)	22.7			7.2		0.2
Level of Service	C			A		A
Approach Delay (s)	22.7			7.2	0.2	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.8	Sum of lost time (s)	4.0
Intersection Capacity Utilization	44.3%	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	606	611	506	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)			1678	1845	3469	
Flt Permitted			0.37	1.00	1.00	
Satd. Flow (perm)			650	1845	3469	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	631	636	527	39
RTOR Reduction (vph)	0	0	0	0	5	0
Lane Group Flow (vph)	0	0	631	636	561	0
Heavy Vehicles (%)	2%	2%	4%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			51.5	56.0	27.3	
Effective Green, g (s)			52.5	56.5	27.8	
Actuated g/C Ratio			0.74	0.80	0.39	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			841	1472	1362	
v/s Ratio Prot			c0.26	0.34	0.16	
v/s Ratio Perm			c0.29			
v/c Ratio			0.75	0.43	0.41	
Uniform Delay, d1			4.6	2.2	15.6	
Progression Factor			0.49	0.13	1.00	
Incremental Delay, d2			2.9	0.8	0.1	
Delay (s)			5.2	1.0	15.6	
Level of Service			A	A	B	
Approach Delay (s)	0.0			3.1	15.6	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.8	Sum of lost time (s)	18.3
Intersection Capacity Utilization	55.4%	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

8/13/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	1135	241	0	0	0	22	0	341	133	0	0	0
Ideal Flow (vphpl)	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		0.96				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1633	1670				1277		2547				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1633	1670				1277		2547				
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)	1220	259	0	0	0	24	0	367	143	0	0	0
RTOR Reduction (vph)	265	70	0	0	0	24	0	54	0	0	0	0
Lane Group Flow (vph)	467	677	0	0	0	0	0	456	0	0	0	0
Heavy Vehicles (%)	5%	4%	2%	0%	0%	3%	0%	14%	19%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	37.9	37.9				2.0		18.1				
Effective Green, g (s)	38.4	38.4				1.0		18.6				
Actuated g/C Ratio	0.55	0.55				0.01		0.27				
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)	896	916				18		677				
v/s Ratio Prot								c0.18				
v/s Ratio Perm	0.29	0.41				c0.00						
v/c Ratio	0.52	0.74				0.02		0.67				
Uniform Delay, d1	10.0	12.0				34.0		23.0				
Progression Factor	0.68	0.17				1.00		1.00				
Incremental Delay, d2	1.1	2.8				0.2		2.6				
Delay (s)	7.9	4.8				34.2		25.6				
Level of Service	A	A				C		C				
Approach Delay (s)		6.3			34.2			25.6			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.1%	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

8/13/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	22	0	0	169	18	34	1471	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			4887				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1271			1644			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	23	0	0	178	19	36	1548	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	1590	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	15%	5%	5%	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)		13.5			13.5			47.5				
Effective Green, g (s)		14.0			14.0			48.0				
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)		254			329			3351				
v/s Ratio Prot					c0.12							
v/s Ratio Perm		0.03						0.33				
v/c Ratio		0.16			0.58			0.47				
Uniform Delay, d1		23.1			25.3			5.1				
Progression Factor		1.08			1.00			0.66				
Incremental Delay, d2		0.3			2.5			0.4				
Delay (s)		25.2			27.8			3.7				
Level of Service		C			C			A				
Approach Delay (s)		25.2			27.8			3.7			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.8	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	51.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	92	147	0	0	83	116	53	1529	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			1712	1504		4520				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1240			1712	1504		4520				
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	87	122	56	1609	111	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	21	0	10	0	0	0	0
Lane Group Flow (vph)	0	252	0	0	96	77	0	1766	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	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)		319			440	387		2841				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.39				
v/c Ratio		0.79			0.22	0.20		0.62				
Uniform Delay, d1		24.2			20.5	20.4		7.9				
Progression Factor		0.96			1.00	1.00		2.18				
Incremental Delay, d2		11.6			0.3	0.3		1.0				
Delay (s)		34.9			20.7	20.6		18.2				
Level of Service		C			C	C		B				
Approach Delay (s)		34.9			20.7			18.2			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	78	31	0	0	73	32	28	1524	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	1752	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	17	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	126	0	0	104	0	0	1833	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			0.59				
Uniform Delay, d1		26.4			25.3			5.0				
Progression Factor		1.61			1.00			0.26				
Incremental Delay, d2		2.8			0.6			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	6.0	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	50.3%	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)	238	26	0	0	32	18	43	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	46	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	1890	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)		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						0.43				
v/c Ratio		0.88			0.10			0.74				
Uniform Delay, d1		23.2			17.6			10.7				
Progression Factor		0.67			1.00			0.63				
Incremental Delay, d2		22.4			0.1			1.6				
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	62.4%	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

8/13/2009

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			0.95						0.68	
Incremental Delay, d2		1.6			2.8						0.5	
Delay (s)		29.6			29.9						2.7	
Level of Service		C			C						A	
Approach Delay (s)		29.6			29.9			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	36	25	57	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)		1451			1468						4405	
Flt Permitted		1.00			0.87						1.00	
Satd. Flow (perm)		1451			1300						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	39	27	62	0	0	0	0	10	1355	86
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	185	0	0	89	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)		14.1			14.1						45.9	
Effective Green, g (s)		14.6			14.6						47.4	
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)		303			271						2983	
v/s Ratio Prot		c0.13										
v/s Ratio Perm					0.07						0.33	
v/c Ratio		0.61			0.33						0.48	
Uniform Delay, d1		25.1			23.5						5.4	
Progression Factor		1.00			1.04						0.25	
Incremental Delay, d2		3.6			0.7						0.5	
Delay (s)		28.7			25.2						1.9	
Level of Service		C			C						A	
Approach Delay (s)		28.7			25.2			0.0			1.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	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 Signalized Intersection Capacity Analysis
312: S "K" Street & W Wishkah Street #1011

8/13/2009

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	1262	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	1372	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	1419	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						0.42	
Uniform Delay, d1		28.2			27.9						3.1	
Progression Factor		1.00			0.53						0.22	
Incremental Delay, d2		1.9			1.3						0.4	
Delay (s)		30.1			16.0						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.1			16.0			0.0			1.0	
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	41.9%	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	106	15	58	74	0	0	0	0	133	1123	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			1823						4570	
Flt Permitted		1.00			0.83						0.99	
Satd. Flow (perm)		1831			1555						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	16	61	78	0	0	0	0	140	1182	33
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	121	0	0	139	0	0	0	0	0	1351	0
Heavy Vehicles (%)	2%	2%	2%	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)		536			455						2709	
v/s Ratio Prot		0.07										
v/s Ratio Perm					c0.09						0.30	
v/c Ratio		0.23			0.31						0.50	
Uniform Delay, d1		18.7			19.2						8.2	
Progression Factor		1.00			0.96						0.84	
Incremental Delay, d2		1.0			1.6						0.6	
Delay (s)		19.7			20.0						7.5	
Level of Service		B			C						A	
Approach Delay (s)		19.7			20.0			0.0			7.5	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.6	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	48.7%	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	162	0	0	0	0	22	347	840
Ideal Flow (vphpl)	1900	1900	1900	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					0.99						1.00	1.00
Satd. Flow (prot)					1326						2482	1400
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1326						2482	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	172	0	0	0	0	23	369	894
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	158	158
Lane Group Flow (vph)	0	0	0	0	202	0	0	0	0	0	681	289
Heavy Vehicles (%)	2%	2%	2%	64%	5%	2%	2%	2%	2%	0%	14%	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)					316						1606	906
v/s Ratio Prot												
v/s Ratio Perm					0.15						0.27	0.21
v/c Ratio					0.64						0.42	0.32
Uniform Delay, d1					23.9						6.0	5.5
Progression Factor					0.81						0.46	0.79
Incremental Delay, d2					4.1						0.7	0.8
Delay (s)					23.5						3.5	5.2
Level of Service					C						A	A
Approach Delay (s)		0.0			23.5			0.0			4.1	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.7	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	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	1319	23	0	0	0	0	0	0	19	335	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)		3143									2573	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3143									2573	
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	1516	26	0	0	0	0	0	0	22	385	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	1541	0	0	0	0	0	0	0	0	403	0
Heavy Vehicles (%)	0%	3%	10%	2%	2%	2%	2%	2%	2%	0%	20%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		40.0									21.0	
Effective Green, g (s)		40.5									21.5	
Actuated g/C Ratio		0.58									0.31	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1818									790	
v/s Ratio Prot		c0.49										
v/s Ratio Perm											0.16	
v/c Ratio		0.85									0.51	
Uniform Delay, d1		12.2									19.9	
Progression Factor		0.75									1.43	
Incremental Delay, d2		4.2									0.5	
Delay (s)		13.3									28.9	
Level of Service		B									C	
Approach Delay (s)		13.3			0.0			0.0			28.9	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.1%	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)	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						1.82	2.04			
Incremental Delay, d2		1.1						4.6	2.3			
Delay (s)		20.8						25.1	18.5			
Level of Service		C						C	B			
Approach Delay (s)		20.8			0.0			23.7			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	22.9	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	30.0	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

8/13/2009

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

8/13/2009

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)	571	1	3	516	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)	614	1	3	555	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			615		1176	615
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			615		1176	615
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		94	99
cM capacity (veh/h)			936		170	414

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	615	558	12
Volume Left	0	3	10
Volume Right	1	0	2
cSH	1700	936	190
Volume to Capacity	0.36	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	25.2
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	25.2
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	564	0	2	542	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	613	0	2	589	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	601			616			1245	1241	618	1235	1236	597
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	601			616			1245	1241	618	1235	1236	597
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	93	99	98
cM capacity (veh/h)	961			947			146	174	491	147	170	495

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	623	602	1	21
Volume Left	10	2	0	10
Volume Right	0	11	0	9
cSH	961	947	174	214
Volume to Capacity	0.01	0.00	0.01	0.10
Queue Length 95th (ft)	1	0	0	8
Control Delay (s)	0.3	0.1	25.9	23.7
Lane LOS	A	A	D	C
Approach Delay (s)	0.3	0.1	25.9	23.7
Approach LOS			D	C

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	567	1	1	537	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	616	1	1	584	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	585			617			1207	1206	617	1207	1206	584
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	585			617			1207	1206	617	1207	1206	584
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)	975			948			160	183	490	160	183	511

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	618	586	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	975	948	241	243
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	20.1	19.9
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	20.1	19.9
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	480	35	10	480	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	527	38	11	527	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	542			566			1241	1214	549	1213	1227	537
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	542			566			1241	1214	549	1213	1227	537
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
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 %	95			99			95	99	100	87	99	94
cM capacity (veh/h)	1010			972			136	172	538	148	167	542

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	618	551	11	54
Volume Left	52	11	7	19
Volume Right	38	12	2	34
cSH	1010	972	168	276
Volume to Capacity	0.05	0.01	0.07	0.20
Queue Length 95th (ft)	4	1	5	18
Control Delay (s)	1.3	0.3	27.9	21.2
Lane LOS	A	A	D	C
Approach Delay (s)	1.3	0.3	27.9	21.2
Approach LOS			D	C

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	500	0	0	27	501
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	543	0	0	29	545
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None				None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			603	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			603	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)			453	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	543	29	545
Volume Left	0	29	0
Volume Right	543	0	0
cSH	1700	1578	1700
Volume to Capacity	0.32	0.02	0.32
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.4	
Approach LOS			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	513	5	0	16	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)	564	5	0	18	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		1130	1130	1133	0
vC1, stage 1 conf vol			1130	1130	0	
vC2, stage 2 conf vol			0	0	1133	
vCu, unblocked vol	0		1130	1130	1133	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 %	64		100	89	100	100
cM capacity (veh/h)	1578		144	156	160	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	376	193	18
Volume Left	376	188	0
Volume Right	0	5	0
cSH	1578	1578	156
Volume to Capacity	0.36	0.36	0.11
Queue Length 95th (ft)	41	41	9
Control Delay (s)	8.5	8.4	30.9
Lane LOS	A	A	D
Approach Delay (s)	8.5		30.9
Approach LOS			D

Intersection Summary			
Average Delay	9.2		
Intersection Capacity Utilization	24.8%	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)	22	3	0	0	172	8	12	505	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	574	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	421	625	0	615	613	299	0			598		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	421	625	0	615	613	299	0			598		
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 %	92	99	100	100	52	99	99			100		
cM capacity (veh/h)	317	400	1091	373	405	700	1600			975		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	28	205	301	311
Volume Left	25	0	14	0
Volume Right	0	9	0	24
cSH	326	412	1600	1700
Volume to Capacity	0.09	0.50	0.01	0.18
Queue Length 95th (ft)	7	67	1	0
Control Delay (s)	17.1	22.0	0.4	0.0
Lane LOS	C	C	A	
Approach Delay (s)	17.1	22.0	0.2	
Approach LOS	C	C		

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	37.8%	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)	8	6	0	0	16	2	5	519	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	541	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	291	556	2	559	554	273	0			546		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	291	556	2	559	554	273	0			546		
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 %	99	99	100	100	96	100	100			100		
cM capacity (veh/h)	622	441	1086	410	442	731	1593			1019		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	15	19	276	276
Volume Left	8	0	5	0
Volume Right	0	2	0	5
cSH	529	462	1593	1700
Volume to Capacity	0.03	0.04	0.00	0.16
Queue Length 95th (ft)	2	3	0	0
Control Delay (s)	12.0	13.1	0.2	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	13.1	0.1	
Approach LOS	B	B		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	29.1%	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)	10	6	0	0	92	9	19	483	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	22	562	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	392	620	4	618	616	288	3			573		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	392	620	4	618	616	288	3			573		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.3			2.2		
p0 queue free %	97	98	100	100	70	98	99			100		
cM capacity (veh/h)	373	360	1019	327	362	655	1571			993		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	117	303	288
Volume Left	12	0	22	0
Volume Right	0	10	0	7
cSH	368	377	1571	1700
Volume to Capacity	0.05	0.31	0.01	0.17
Queue Length 95th (ft)	4	33	1	0
Control Delay (s)	15.3	18.8	0.6	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.3	18.8	0.3	
Approach LOS	C	C		

Intersection Summary				
Average Delay		3.7		
Intersection Capacity Utilization		31.8%	ICU Level of Service	A
Analysis Period (min)		15		

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

8/13/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	12	3	86	23	0	0	0	0	3	343	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	4	102	27	0	0	0	0	4	408	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	0.94	0.94	0.94	0.94	0.94		0.94					
vC, conflicting volume	438	431	213	229	436	7	422			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	273	265	33	51	271	7	256			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	4.1	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	95	100	100			100		
cM capacity (veh/h)	561	567	930	844	581	1055	1224			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	130	208	215
Volume Left	0	102	4	0
Volume Right	4	0	0	11
cSH	615	771	1541	1700
Volume to Capacity	0.03	0.17	0.00	0.13
Queue Length 95th (ft)	2	15	0	0
Control Delay (s)	11.0	10.6	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.0	10.6	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.8		
Intersection Capacity Utilization		31.3%	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	12	2	16	11	0	0	0	0	10	405	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	435	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	472	464	226	251	471	4	448			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	472	464	226	251	471	4	448			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	98	100	100			99		
cM capacity (veh/h)	466	494	783	667	490	1080	1108			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	228	231
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	522	582	1576	1700
Volume to Capacity	0.03	0.05	0.01	0.14
Queue Length 95th (ft)	2	4	1	0
Control Delay (s)	12.1	11.5	0.4	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.1	11.5	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization		30.5%	ICU Level of Service	A
Analysis Period (min)		15		

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	359	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	382	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	452			0			467	445	228	238	480	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	452			0			467	445	228	238	480	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	94	100	80	91	100
cM capacity (veh/h)	1105			1565			446	506	781	660	482	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	205	261	33	176
Volume Left	14	0	0	131
Volume Right	0	70	1	0
cSH	1565	1700	512	603
Volume to Capacity	0.01	0.15	0.06	0.29
Queue Length 95th (ft)	1	0	5	30
Control Delay (s)	0.6	0.0	12.5	13.4
Lane LOS	A		B	B
Approach Delay (s)	0.2		12.5	13.4
Approach LOS			B	B

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
362: S Division Street & W Heron Street

8/13/2009

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	0	0	0	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	0	0	0	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	49			29			70	78	49	70	70	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	49			29			70	78	49	70	70	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)	1558			1584			922	658	1020	908	810	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	49	0	5
Volume Left	0	0	0	5
Volume Right	17	0	0	0
cSH	1558	1584	1700	908
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	0.0	9.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	9.0
Approach LOS			A	A

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization		13.3%	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	44	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	48	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	61	48	49			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	48	49			
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)	944	1020	1571			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	49
Volume Left	1	1	0
Volume Right	1	0	1
cSH	981	1571	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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	35	403	4	4	449	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	463	5	5	516	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	516			468			1121	1071	466	1080	1077	520
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	516			468			1121	1071	466	1080	1077	520
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			88	98	99	97	100	91
cM capacity (veh/h)	1005			1104			155	203	579	178	202	539

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	40	468	5	523	28	55
Volume Left	40	0	5	0	18	6
Volume Right	0	5	0	7	6	49
cSH	1005	1700	1104	1700	189	445
Volume to Capacity	0.04	0.28	0.00	0.31	0.15	0.12
Queue Length 95th (ft)	3	0	0	0	12	11
Control Delay (s)	8.7	0.0	8.3	0.0	27.2	14.2
Lane LOS	A		A		D	B
Approach Delay (s)	0.7		0.1		27.2	14.2
Approach LOS					D	B

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	342	10	15	399	100	9	14	39	53	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	372	11	16	434	109	10	15	42	58	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	542			383			967	989	377	985	940	488
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	542			383			967	989	377	985	940	488
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	93	71	97	95
cM capacity (veh/h)	987			1133			202	228	644	197	256	582

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	401	559	67	93
Volume Left	18	16	10	58
Volume Right	11	109	42	29
cSH	987	1133	372	254
Volume to Capacity	0.02	0.01	0.18	0.37
Queue Length 95th (ft)	1	1	16	40
Control Delay (s)	0.6	0.4	16.8	27.2
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	16.8	27.2
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	296	2	4	0	290	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	333	2	4	0	326	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	326			335			365	691	334	415	366	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	326			335			365	691	334	415	366	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	90	95	100	100	100
cM capacity (veh/h)	1206			589			583	362	708	477	553	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	335	4	326	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	326	33
cSH	1206	1700	589	1700	471
Volume to Capacity	0.01	0.20	0.01	0.19	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.0	0.0	11.2	0.0	13.9
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.2		13.9
Approach LOS					B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

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

8/13/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	81	0	58	0	0	0	31	69	62	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)	95	0	68	0	0	0	36	81	73	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			68		244	259	0	324	225	34
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			68		244	259	0	324	225	34
tC, single (s)	4.2			4.1		7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	94			100		100	94	92	86	94	100
cM capacity (veh/h)	1572			1533		641	602	1068	532	637	1045

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	164	0	118	111
Volume Left	95	0	0	73
Volume Right	68	0	81	0
cSH	1572	1700	861	564
Volume to Capacity	0.06	0.00	0.14	0.20
Queue Length 95th (ft)	5	0	12	18
Control Delay (s)	4.5	0.0	9.8	12.9
Lane LOS	A		A	B
Approach Delay (s)	4.5	0.0	9.8	12.9
Approach LOS			A	B

Intersection Summary			
Average Delay	8.5		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	54	77	75	43	96	281
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	59	84	82	47	104	305
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			142		310	101
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			142		310	101
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		84	68
cM capacity (veh/h)			1453		644	960

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	142	128	410
Volume Left	0	82	104
Volume Right	84	0	305
cSH	1700	1453	854
Volume to Capacity	0.08	0.06	0.48
Queue Length 95th (ft)	0	4	66
Control Delay (s)	0.0	5.0	13.1
Lane LOS		A	B
Approach Delay (s)	0.0	5.0	13.1
Approach LOS			B

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	0	1	0	0	1	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1	0	0	1	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1		1	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1		1	1
tC, single (s)			4.1		7.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.4	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1622		818	1084

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	1	0	1
Volume Left	0	0	1
Volume Right	1	0	0
cSH	1700	1700	818
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	9.4
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	342	19	15	442	31	48	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		0.99			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.96	1.00		0.97	
Satd. Flow (prot)		1751			1828			1794	1538		1749	
Flt Permitted		0.98			0.99			0.72	1.00		0.78	
Satd. Flow (perm)		1726			1805			1342	1538		1408	
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	368	20	16	475	33	52	9	27	34	9	14
RTOR Reduction (vph)	0	2	0	0	2	0	0	0	22	0	12	0
Lane Group Flow (vph)	0	398	0	0	522	0	0	61	5	0	45	0
Heavy Vehicles (%)	7%	8%	1%	2%	3%	2%	1%	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)		22.6			22.6			6.2	6.2		6.2	
Effective Green, g (s)		23.1			23.1			6.7	6.7		6.7	
Actuated g/C Ratio		0.61			0.61			0.18	0.18		0.18	
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)		1055			1103			238	273		250	
v/s Ratio Prot												
v/s Ratio Perm		0.23			c0.29			c0.05	0.00		0.03	
v/c Ratio		0.38			0.47			0.26	0.02		0.18	
Uniform Delay, d1		3.7			4.0			13.4	12.8		13.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.6	0.0		0.4	
Delay (s)		3.9			4.3			14.0	12.9		13.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		3.9			4.3			13.6			13.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	37.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	198	15	5	286	19	6
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)	225	17	6	325	22	7
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			242		561	225
vC1, stage 1 conf vol					225	
vC2, stage 2 conf vol					336	
vCu, unblocked vol			242		561	225
tC, single (s)			4.7		6.5	6.8
tC, 2 stage (s)					5.5	
tF (s)			2.7		3.6	3.8
p0 queue free %			99		97	99
cM capacity (veh/h)			1049		626	695

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	225	17	6	325	28
Volume Left	0	0	6	0	22
Volume Right	0	17	0	0	7
cSH	1700	1700	1049	1700	642
Volume to Capacity	0.13	0.01	0.01	0.19	0.04
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	8.5	0.0	10.9
Lane LOS			A		B
Approach Delay (s)	0.0		0.1		10.9
Approach LOS					B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
400: Simpson Avenue/N Park Street #1012 & Market Street

8/13/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	121	1419	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)		3346						3237			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3346						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	1526	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	1668	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)		2624						328			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.50									c0.03	
v/c Ratio		0.64						0.19			0.34	
Uniform Delay, d1		3.2						28.8			29.3	
Progression Factor		1.00						1.00			0.56	
Incremental Delay, d2		1.2						0.3			0.6	
Delay (s)		4.4						29.1			16.9	
Level of Service		A						C			B	
Approach Delay (s)		4.4			0.0			29.1			16.9	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.3	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	57.3%	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)	15	1455	76	0	0	0	0	86	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)		3336						1715			1621	
Flt Permitted		1.00						1.00			0.57	
Satd. Flow (perm)		3336						1715			947	
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	1712	89	0	0	0	0	101	145	93	98	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	1816	0	0	0	0	0	234	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)		44.6						16.0			16.0	
Effective Green, g (s)		44.6						16.0			16.0	
Actuated g/C Ratio		0.65						0.23			0.23	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		2169						400			221	
v/s Ratio Prot								0.14				
v/s Ratio Perm		0.54									c0.20	
v/c Ratio		0.84						0.59			0.86	
Uniform Delay, d1		9.2						23.4			25.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.9						2.2			27.7	
Delay (s)		12.1						25.6			52.9	
Level of Service		B						C			D	
Approach Delay (s)		12.1			0.0			25.6			52.9	
Approach LOS		B			A			C			D	

Intersection Summary			
HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	68.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1454	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)		3353						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3353						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	1499	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	1541	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)		37.8						4.6			4.6	
Effective Green, g (s)		38.3						5.1			5.1	
Actuated g/C Ratio		0.75						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)		2498						158			134	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.46									c0.04	
v/c Ratio		0.62						0.19			0.42	
Uniform Delay, d1		3.1						21.2			21.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.5						0.6			2.1	
Delay (s)		3.5						21.8			23.9	
Level of Service		A						C			C	
Approach Delay (s)		3.5			0.0			21.8			23.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	51.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	56	1477	30	0	0	0	0	36	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)	58	1523	31	0	0	0	0	37	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			1554			1677	1654	777	934	1669	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1554			1677	1654	777	934	1669	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 %	96			100			100	60	89	66	50	100
cM capacity (veh/h)	1614			422			37	93	338	133	94	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	819	792	75	92
Volume Left	58	0	0	45
Volume Right	0	31	38	0
cSH	1614	1700	147	110
Volume to Capacity	0.04	0.47	0.51	0.84
Queue Length 95th (ft)	3	0	62	121
Control Delay (s)	1.0	0.0	52.8	117.8
Lane LOS	A		F	F
Approach Delay (s)	0.5		52.8	117.8
Approach LOS			F	F

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	1157	12	0	0	0	0	367	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	3357						3426				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3357						3426				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	1258	13	0	0	0	0	399	10	0	0	0
RTOR Reduction (vph)	48	1	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	62	1270	0	0	0	0	0	406	0	0	0	0
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	4%	5%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	26.2	26.2						11.7				
Effective Green, g (s)	27.2	27.2						12.7				
Actuated g/C Ratio	0.57	0.57						0.27				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	995	1906						908				
v/s Ratio Prot		c0.38						c0.12				
v/s Ratio Perm	0.04											
v/c Ratio	0.06	0.67						0.45				
Uniform Delay, d1	4.6	7.2						14.7				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.9						0.4				
Delay (s)	4.7	8.1						15.0				
Level of Service	A	A						B				
Approach Delay (s)		7.8			0.0			15.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	47.9	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)	17	1101	71	0	0	0	0	27	455	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					0.87	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1547	1519		1811	
Flt Permitted		1.00	1.00					1.00	1.00		0.63	
Satd. Flow (perm)		2893	1300					1547	1519		1164	
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	1184	76	0	0	0	0	29	489	45	34	0
RTOR Reduction (vph)	0	0	13	0	0	0	0	39	39	0	0	0
Lane Group Flow (vph)	0	1202	63	0	0	0	0	220	220	0	79	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	1%	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)		45.6	45.6					15.4	15.4		15.4	
Effective Green, g (s)		46.1	46.1					15.9	15.9		15.9	
Actuated g/C Ratio		0.66	0.66					0.23	0.23		0.23	
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)		1905	856					351	345		264	
v/s Ratio Prot		c0.42						0.14				
v/s Ratio Perm			0.05						c0.15		0.07	
v/c Ratio		0.63	0.07					0.63	0.64		0.30	
Uniform Delay, d1		7.0	4.3					24.4	24.5		22.4	
Progression Factor		0.44	0.32					1.00	1.00		1.00	
Incremental Delay, d2		1.4	0.2					3.5	3.9		0.6	
Delay (s)		4.5	1.5					27.9	28.3		23.1	
Level of Service		A	A					C	C		C	
Approach Delay (s)		4.4			0.0			28.1			23.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	24	1071	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)		2882						1314			1459	
Flt Permitted		1.00						1.00			0.86	
Satd. Flow (perm)		2882						1314			1278	
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	1127	26	0	0	0	0	13	93	8	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	52	0	0	0	0
Lane Group Flow (vph)	0	1177	0	0	0	0	0	54	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)		54.5						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)		2244						141			137	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.41									0.01	
v/c Ratio		0.52						0.38			0.14	
Uniform Delay, d1		2.9						29.1			28.3	
Progression Factor		0.41						1.00			1.00	
Incremental Delay, d2		0.6						1.7			0.5	
Delay (s)		1.8						30.8			28.8	
Level of Service		A						C			C	
Approach Delay (s)		1.8			0.0			30.8			28.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.4%	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	927	16	0	0	0	0	0	29	294	321	0
Ideal Flow (vphpl)	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	1423	
Flt Permitted		1.00							1.00	0.95	1.00	
Satd. Flow (perm)		2887							1289	1681	1423	
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	976	17	0	0	0	0	0	31	309	338	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	27	176	4	0
Lane Group Flow (vph)	0	991	0	0	0	0	0	0	4	102	365	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)		28.7							9.5	18.3	18.3	
Effective Green, g (s)		29.2							10.0	18.8	18.8	
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)		1204							184	451	382	
v/s Ratio Prot		c0.34							c0.00	0.06	c0.26	
v/s Ratio Perm												
v/c Ratio		0.82							0.02	0.23	0.95	
Uniform Delay, d1		18.1							25.8	19.9	25.2	
Progression Factor		1.10							1.00	1.00	1.00	
Incremental Delay, d2		5.9							0.2	1.2	35.9	
Delay (s)		25.9							26.0	21.1	61.1	
Level of Service		C							C	C	E	
Approach Delay (s)		25.9			0.0			26.0			43.9	
Approach LOS		C			A			C			D	

Intersection Summary			
HCM Average Control Delay	32.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.4%	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)	8	394	12	0	0	0	0	83	26	469	63	0
Ideal Flow (vphpl)	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						0.97		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.96	
Satd. Flow (prot)		2853						1452		1681	1363	
Flt Permitted		1.00						1.00		0.95	0.96	
Satd. Flow (perm)		2853						1452		1681	1363	
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	419	13	0	0	0	0	88	28	499	67	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	17	0	0	0	0
Lane Group Flow (vph)	0	438	0	0	0	0	0	99	0	279	287	0
Heavy Vehicles (%)	6%	7%	6%	2%	2%	2%	2%	1%	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)		17.4						8.1		31.0	31.0	
Effective Green, g (s)		17.9						8.6		31.5	31.5	
Actuated g/C Ratio		0.26						0.12		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)		730						178		756	613	
v/s Ratio Prot								c0.07		0.17	c0.21	
v/s Ratio Perm		0.15										
v/c Ratio		0.60						0.56		0.37	0.47	
Uniform Delay, d1		22.9						28.9		12.7	13.4	
Progression Factor		1.00						1.01		1.00	1.00	
Incremental Delay, d2		1.4						3.8		1.4	2.6	
Delay (s)		24.3						32.9		14.1	16.0	
Level of Service		C						C		B	B	
Approach Delay (s)		24.3			0.0			32.9			15.0	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.5%	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	318	0	511	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)		1774		2091		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1774		2091		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	353	0	568	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	353	0	568	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	5%	2%	3%	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)		1319		1555		
v/s Ratio Prot		0.20		c0.27		
v/s Ratio Perm						
v/c Ratio		0.27		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	37.5%	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	968	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			3046			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	1008	24	19	174	0	0	96	258
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	63	0
Lane Group Flow (vph)	0	0	0	0	1045	0	0	193	0	0	291	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)					48.5			12.5			12.5	
Effective Green, g (s)					49.0			13.0			13.0	
Actuated g/C Ratio					0.70			0.19			0.19	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2443			566			556	
v/s Ratio Prot											c0.10	
v/s Ratio Perm					0.30			0.06				
v/c Ratio					0.43			0.34			0.52	
Uniform Delay, d1					4.5			24.8			25.7	
Progression Factor					1.40			1.02			1.00	
Incremental Delay, d2					0.5			0.3			0.9	
Delay (s)					6.8			25.7			26.6	
Level of Service					A			C			C	
Approach Delay (s)		0.0			6.8			25.7			26.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	14	1276	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	1357	20	14	414	0	0	55	296
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	42
Lane Group Flow (vph)	0	0	0	0	1390	0	0	428	0	0	55	254
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					0.41			c0.25				0.16
v/c Ratio					0.67			0.94			0.12	0.58
Uniform Delay, d1					8.9			24.9			19.2	22.1
Progression Factor					0.65			1.00			1.00	1.00
Incremental Delay, d2					1.7			29.3			0.5	5.5
Delay (s)					7.5			54.2			19.7	27.6
Level of Service					A			D			B	C
Approach Delay (s)		0.0			7.5			54.2			26.4	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1232	94	35	88	0	0	215	105
Ideal Flow (vphpl)	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		0.99			1.00	
Satd. Flow (prot)					3567	1553		1831			1789	
Flt Permitted					1.00	1.00		0.81			1.00	
Satd. Flow (perm)					3567	1553		1513			1789	
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	1297	99	37	93	0	0	226	111
RTOR Reduction (vph)	0	0	0	0	0	42	0	0	0	0	26	0
Lane Group Flow (vph)	0	0	0	0	1343	57	0	130	0	0	311	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	2%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					31.9	31.9		15.6			15.6	
Effective Green, g (s)					31.9	31.9		15.6			15.6	
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)					2050	893		425			503	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.38	0.04		0.09				
v/c Ratio					0.66	0.06		0.31			0.62	
Uniform Delay, d1					8.0	5.2		15.7			17.4	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					0.8	0.0		0.4			2.3	
Delay (s)					8.8	5.2		16.1			19.6	
Level of Service					A	A		B			B	
Approach Delay (s)		0.0			8.6			16.1			19.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	55.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	34	1410	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	1500	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	1541	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					0.46			c0.02				
v/c Ratio					0.61			0.37			0.29	
Uniform Delay, d1					2.2			18.6			18.5	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.4			3.1			2.0	
Delay (s)					2.7			21.7			20.5	
Level of Service					A			C			C	
Approach Delay (s)		0.0			2.7			21.7			20.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	40.1	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			

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	43	1299	12	58	21	0	0	18	14
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	1427	13	64	23	0	0	20	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1441			0			834	1535	0	1540	1529	720
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1441			0			834	1535	0	1540	1529	720
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			70	80	100	100	83	96
cM capacity (veh/h)	467			1622			213	113	1084	66	115	375

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	761	727	87	35
Volume Left	47	0	64	0
Volume Right	0	13	0	15
cSH	1622	1700	172	165
Volume to Capacity	0.03	0.43	0.50	0.21
Queue Length 95th (ft)	2	0	62	19
Control Delay (s)	0.8	0.0	45.5	32.6
Lane LOS	A		E	D
Approach Delay (s)	0.4		45.5	32.6
Approach LOS			E	D

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1295	2	429	18	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)					3362		1588	1599				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3362		1588	1599				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	1455	2	482	20	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	1457	0	98	98	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	8%	7%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					29.8		9.3	9.3				0.7
Effective Green, g (s)					30.8		10.3	10.3				1.7
Actuated g/C Ratio					0.56		0.19	0.19				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)					1890		298	301				50
v/s Ratio Prot					c0.43							
v/s Ratio Perm							c0.06	0.06				c0.00
v/c Ratio					0.77		0.33	0.33				0.01
Uniform Delay, d1					9.3		19.3	19.3				25.7
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					2.0		0.7	0.6				0.0
Delay (s)					11.3		19.9	19.9				25.8
Level of Service					B		B	B				C
Approach Delay (s)		0.0			11.3			19.9			25.8	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	13.5	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	54.9%	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	1315	181	0	87
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	1384	191	0	92
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1384				1384	692
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1384				1384	692
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	76
cM capacity (veh/h)	491				132	382

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	692	692	191	92
Volume Left	0	0	0	0
Volume Right	0	0	191	92
cSH	1700	1700	1700	382
Volume to Capacity	0.41	0.41	0.11	0.24
Queue Length 95th (ft)	0	0	0	23
Control Delay (s)	0.0	0.0	0.0	17.4
Lane LOS				C
Approach Delay (s)	0.0			17.4
Approach LOS				C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	48.4%	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

8/13/2009

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	584	1055	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)	602	1088	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			602	602	602	1690	1690	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			602	602	602	1690	1690	
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)			414	500	412	93	378	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	965	725	9	103
Volume Left	0	0	9	0
Volume Right	363	725	0	0
cSH	1700	1700	412	93
Volume to Capacity	0.57	0.43	0.02	1.10
Queue Length 95th (ft)	0	0	2	171
Control Delay (s)	0.0	0.0	13.9	207.4
Lane LOS			B	F
Approach Delay (s)	0.0		191.4	
Approach LOS			F	

Intersection Summary			
Average Delay	11.9		
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	91	0	0	1177	0	491
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)	1787			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1787			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	99	0	0	1279	0	534
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	99	0	0	1279	0	534
Heavy Vehicles (%)	1%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	15.4			45.9		70.3
Effective Green, g (s)	15.9			46.4		70.3
Actuated g/C Ratio	0.23			0.66		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	404			2313		2787
v/s Ratio Prot	c0.06			c0.36		
v/s Ratio Perm						c0.19
v/c Ratio	0.25			0.55		0.19
Uniform Delay, d1	22.3			6.4		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.1
Delay (s)	22.4			7.3		0.1
Level of Service	C			A		A
Approach Delay (s)	22.4			7.3	0.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	4.0
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	605	611	491	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			0.38	1.00	1.00	
Satd. Flow (perm)			676	1845	3468	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	630	636	511	39
RTOR Reduction (vph)	0	0	0	0	5	0
Lane Group Flow (vph)	0	0	630	636	545	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)			51.0	55.5	27.2	
Effective Green, g (s)			52.0	56.0	27.7	
Actuated g/C Ratio			0.74	0.80	0.39	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			852	1470	1366	
v/s Ratio Prot			c0.26	0.34	0.16	
v/s Ratio Perm			c0.29			
v/c Ratio			0.74	0.43	0.40	
Uniform Delay, d1			4.4	2.2	15.3	
Progression Factor			0.48	0.13	1.00	
Incremental Delay, d2			2.5	0.8	0.1	
Delay (s)			4.6	1.0	15.4	
Level of Service			A	A	B	
Approach Delay (s)	0.0			2.8	15.4	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	18.3
Intersection Capacity Utilization	54.9%	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

8/13/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	1135	241	0	0	0	22	0	342	133	0	0	0
Ideal Flow (vphpl)	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		0.96				
Flt Protected	0.95	0.97				1.00		1.00				
Satd. Flow (prot)	1633	1670				1277		2547				
Flt Permitted	0.95	0.97				1.00		1.00				
Satd. Flow (perm)	1633	1670				1277		2547				
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)	1220	259	0	0	0	24	0	368	143	0	0	0
RTOR Reduction (vph)	266	71	0	0	0	24	0	54	0	0	0	0
Lane Group Flow (vph)	466	676	0	0	0	0	0	457	0	0	0	0
Heavy Vehicles (%)	5%	4%	2%	0%	0%	3%	0%	14%	19%	2%	2%	2%
Parking (#/hr)						20		40				
Turn Type	Perm					custom						
Protected Phases		2						4				
Permitted Phases	2					3						
Actuated Green, G (s)	37.8	37.8				2.1		18.1				
Effective Green, g (s)	38.3	38.3				1.1		18.6				
Actuated g/C Ratio	0.55	0.55				0.02		0.27				
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)	893	914				20		677				
v/s Ratio Prot								c0.18				
v/s Ratio Perm	0.29	0.40				c0.00						
v/c Ratio	0.52	0.74				0.02		0.67				
Uniform Delay, d1	10.0	12.1				33.9		23.0				
Progression Factor	0.69	0.17				1.00		1.00				
Incremental Delay, d2	1.1	2.8				0.1		2.7				
Delay (s)	8.0	4.9				34.1		25.7				
Level of Service	A	A				C		C				
Approach Delay (s)		6.4			34.1			25.7			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.1%	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

8/13/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	16	22	0	0	176	18	34	1472	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			4887				
Flt Permitted		0.85			1.00			1.00				
Satd. Flow (perm)		1270			1645			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	23	0	0	185	19	36	1549	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	1591	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	15%	5%	5%	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)		13.8			13.8			47.2				
Effective Green, g (s)		14.3			14.3			47.7				
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)		259			336			3330				
v/s Ratio Prot					c0.12							
v/s Ratio Perm		0.03						0.33				
v/c Ratio		0.15			0.59			0.48				
Uniform Delay, d1		22.9			25.2			5.3				
Progression Factor		1.08			1.00			0.66				
Incremental Delay, d2		0.3			2.6			0.4				
Delay (s)		24.9			27.8			3.8				
Level of Service		C			C			A				
Approach Delay (s)		24.9			27.8			3.8			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.0	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	51.3%	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

8/13/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	92	147	0	0	83	116	53	1530	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			1712	1504		4520				
Flt Permitted		0.83			1.00	1.00		1.00				
Satd. Flow (perm)		1240			1712	1504		4520				
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	87	122	56	1611	111	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	21	0	10	0	0	0	0
Lane Group Flow (vph)	0	252	0	0	96	77	0	1768	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	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)		319			440	387		2841				
v/s Ratio Prot					0.06							
v/s Ratio Perm		c0.20				0.05		0.39				
v/c Ratio		0.79			0.22	0.20		0.62				
Uniform Delay, d1		24.2			20.5	20.4		7.9				
Progression Factor		0.96			1.00	1.00		2.17				
Incremental Delay, d2		11.5			0.3	0.3		1.0				
Delay (s)		34.7			20.7	20.6		18.2				
Level of Service		C			C	C		B				
Approach Delay (s)		34.7			20.7			18.2			0.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	20.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.5%	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

8/13/2009

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	78	31	0	0	73	32	28	1525	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	1753	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	126	0	0	105	0	0	1834	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			0.59				
Uniform Delay, d1		26.4			25.4			5.0				
Progression Factor		1.60			1.00			0.25				
Incremental Delay, d2		2.8			0.7			0.7				
Delay (s)		45.2			26.0			1.9				
Level of Service		D			C			A				
Approach Delay (s)		45.2			26.0			1.9			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.0	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	50.3%	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)	238	26	0	0	32	18	43	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	46	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	1891	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)		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						0.43				
v/c Ratio		0.88			0.10			0.74				
Uniform Delay, d1		23.2			17.6			10.7				
Progression Factor		0.67			1.00			0.63				
Incremental Delay, d2		22.4			0.1			1.6				
Delay (s)		38.0			17.7			8.3				
Level of Service		D			B			A				
Approach Delay (s)		38.0			17.7			8.3			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	62.4%	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)	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			0.25				
Incremental Delay, d2		3.1			0.1			0.5				
Delay (s)		26.4			26.7			1.5				
Level of Service		C			C			A				
Approach Delay (s)		26.4			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	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			0.95						0.67	
Incremental Delay, d2		1.7			2.8						0.5	
Delay (s)		29.8			29.9						2.7	
Level of Service		C			C						A	
Approach Delay (s)		29.8			29.9			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	36	25	57	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)		1451			1468						4407	
Flt Permitted		1.00			0.87						1.00	
Satd. Flow (perm)		1451			1300						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	39	27	62	0	0	0	0	10	1420	86
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	185	0	0	89	0	0	0	0	0	1509	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)		14.1			14.1						45.9	
Effective Green, g (s)		14.6			14.6						47.4	
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)		303			271						2984	
v/s Ratio Prot		c0.13										
v/s Ratio Perm					0.07						0.34	
v/c Ratio		0.61			0.33						0.51	
Uniform Delay, d1		25.1			23.5						5.5	
Progression Factor		1.00			1.04						0.24	
Incremental Delay, d2		3.6			0.7						0.6	
Delay (s)		28.7			25.2						1.9	
Level of Service		C			C						A	
Approach Delay (s)		28.7			25.2			0.0			1.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.5%	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

8/13/2009

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	1321	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	1436	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	1483	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						0.33	
v/c Ratio		0.48			0.38						0.44	
Uniform Delay, d1		28.2			27.9						3.1	
Progression Factor		1.00			0.52						0.21	
Incremental Delay, d2		1.9			1.3						0.4	
Delay (s)		30.1			15.9						1.0	
Level of Service		C			B						A	
Approach Delay (s)		30.1			15.9			0.0			1.0	
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	43.1%	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	15	58	74	0	0	0	0	133	1182	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			1823						4572	
Flt Permitted		1.00			0.83						1.00	
Satd. Flow (perm)		1831			1555						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	16	61	78	0	0	0	0	140	1244	33
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	121	0	0	139	0	0	0	0	0	1413	0
Heavy Vehicles (%)	2%	2%	2%	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)		536			455						2711	
v/s Ratio Prot		0.07										
v/s Ratio Perm					c0.09						0.31	
v/c Ratio		0.23			0.31						0.52	
Uniform Delay, d1		18.7			19.2						8.4	
Progression Factor		1.00			0.96						0.83	
Incremental Delay, d2		1.0			1.6						0.7	
Delay (s)		19.7			20.0						7.7	
Level of Service		B			C						A	
Approach Delay (s)		19.7			20.0			0.0			7.7	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.6	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	49.8%	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	169	0	0	0	0	22	348	898
Ideal Flow (vphpl)	1900	1900	1900	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					0.99						1.00	1.00
Satd. Flow (prot)					1331						2491	1413
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					1331						2491	1413
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	180	0	0	0	0	23	370	955
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	171	171
Lane Group Flow (vph)	0	0	0	0	210	0	0	0	0	0	700	306
Heavy Vehicles (%)	2%	2%	2%	64%	5%	2%	2%	2%	2%	0%	14%	4%
Parking (#/hr)					20						40	
Turn Type				Perm						Perm		Perm
Protected Phases					4						2	
Permitted Phases				4						2		2
Actuated Green, G (s)					16.6						44.4	44.4
Effective Green, g (s)					17.1						44.9	44.9
Actuated g/C Ratio					0.24						0.64	0.64
Clearance Time (s)					4.5						4.5	4.5
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					325						1598	906
v/s Ratio Prot												
v/s Ratio Perm					0.16						0.28	0.22
v/c Ratio					0.65						0.44	0.34
Uniform Delay, d1					23.7						6.3	5.7
Progression Factor					0.81						0.49	1.10
Incremental Delay, d2					4.2						0.8	0.9
Delay (s)					23.6						3.9	7.2
Level of Service					C						A	A
Approach Delay (s)		0.0			23.6			0.0			5.0	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.5	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	54.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	1319	23	0	0	0	0	0	0	19	336	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)		3143									2573	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3143									2573	
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	1516	26	0	0	0	0	0	0	22	386	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	1541	0	0	0	0	0	0	0	0	404	0
Heavy Vehicles (%)	0%	3%	10%	2%	2%	2%	2%	2%	2%	0%	20%	0%
Parking (#/hr)		20									40	
Turn Type										Perm		
Protected Phases		4									2	
Permitted Phases										2		
Actuated Green, G (s)		40.0									21.0	
Effective Green, g (s)		40.5									21.5	
Actuated g/C Ratio		0.58									0.31	
Clearance Time (s)		4.5									4.5	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		1818									790	
v/s Ratio Prot		c0.49										
v/s Ratio Perm											0.16	
v/c Ratio		0.85									0.51	
Uniform Delay, d1		12.2									19.9	
Progression Factor		0.75									1.41	
Incremental Delay, d2		4.2									0.5	
Delay (s)		13.3									28.6	
Level of Service		B									C	
Approach Delay (s)		13.3			0.0			0.0			28.6	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.1%	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)	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						1.82	2.04			
Incremental Delay, d2		1.1						4.7	2.3			
Delay (s)		20.8						25.1	18.5			
Level of Service		C						C	B			
Approach Delay (s)		20.8			0.0			23.7			0.0	
Approach LOS		C			A			C			A	

Intersection Summary			
HCM Average Control Delay	22.9	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

8/13/2009

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

8/13/2009

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

8/13/2009

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

8/13/2009

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		

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)	572	1	3	517	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)	615	1	3	556	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			616		1178	616
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			616		1178	616
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		94	99
cM capacity (veh/h)			935		169	414

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	616	559	12
Volume Left	0	3	10
Volume Right	1	0	2
cSH	1700	935	190
Volume to Capacity	0.36	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.1	25.2
Lane LOS		A	D
Approach Delay (s)	0.0	0.1	25.2
Approach LOS			D

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	40.2%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	565	0	2	543	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	614	0	2	590	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	602			617			1247	1243	619	1237	1238	598
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	602			617			1247	1243	619	1237	1238	598
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	93	99	98
cM capacity (veh/h)	960			946			145	173	490	147	170	494

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	624	603	1	21
Volume Left	10	2	0	10
Volume Right	0	11	0	9
cSH	960	946	173	213
Volume to Capacity	0.01	0.00	0.01	0.10
Queue Length 95th (ft)	1	0	0	8
Control Delay (s)	0.3	0.1	25.9	23.7
Lane LOS	A	A	D	C
Approach Delay (s)	0.3	0.1	25.9	23.7
Approach LOS			D	C

Intersection Summary			
Average Delay	0.6		
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 (veh/h)	1	568	1	1	538	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	617	1	1	585	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	586			618			1209	1208	618	1209	1208	585
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	586			618			1209	1208	618	1209	1208	585
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)	974			947			159	183	489	159	183	511

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	620	587	2	2
Volume Left	1	1	1	1
Volume Right	1	1	1	1
cSH	974	947	240	243
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	20.1	20.0
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.0	20.1	20.0
Approach LOS			C	C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	481	35	10	481	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	529	38	11	529	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	543			567			1243	1216	550	1215	1229	538
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	543			567			1243	1216	550	1215	1229	538
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
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 %	95			99			95	99	100	87	99	94
cM capacity (veh/h)	1009			971			135	171	538	148	166	542

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	619	552	11	54
Volume Left	52	11	7	19
Volume Right	38	12	2	34
cSH	1009	971	167	275
Volume to Capacity	0.05	0.01	0.07	0.20
Queue Length 95th (ft)	4	1	5	18
Control Delay (s)	1.3	0.3	28.0	21.3
Lane LOS	A	A	D	C
Approach Delay (s)	1.3	0.3	28.0	21.3
Approach LOS			D	C

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	501	0	0	27	502
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	545	0	0	29	546
Pedestrians						
Lane Width (ft)						
Walking Speed (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	0	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			604	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)			453	1085	1578	

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	545	29	546
Volume Left	0	29	0
Volume Right	545	0	0
cSH	1700	1578	1700
Volume to Capacity	0.32	0.02	0.32
Queue Length 95th (ft)	0	1	0
Control Delay (s)	0.0	7.3	0.0
Lane LOS		A	
Approach Delay (s)	0.0	0.4	
Approach LOS			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations						
Volume (veh/h)	514	5	0	16	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)	565	5	0	18	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		1132	1132	1135	0
vC1, stage 1 conf vol			1132	1132	0	
vC2, stage 2 conf vol			0	0	1135	
vCu, unblocked vol	0		1132	1132	1135	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 %	64		100	89	100	100
cM capacity (veh/h)	1578		144	156	160	1085

Direction, Lane #	SB 1	SB 2	NE 1
Volume Total	377	194	18
Volume Left	377	188	0
Volume Right	0	5	0
cSH	1578	1578	156
Volume to Capacity	0.36	0.36	0.11
Queue Length 95th (ft)	41	41	9
Control Delay (s)	8.5	8.4	31.0
Lane LOS	A	A	D
Approach Delay (s)	8.5		31.0
Approach LOS			D

Intersection Summary			
Average Delay	9.2		
Intersection Capacity Utilization	24.8%	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)	22	3	0	0	172	8	12	506	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	575	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	422	626	0	616	614	299	0			599		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	422	626	0	616	614	299	0			599		
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 %	92	99	100	100	52	99	99			100		
cM capacity (veh/h)	317	400	1091	372	404	700	1600			974		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	28	205	301	311
Volume Left	25	0	14	0
Volume Right	0	9	0	24
cSH	325	412	1600	1700
Volume to Capacity	0.09	0.50	0.01	0.18
Queue Length 95th (ft)	7	67	1	0
Control Delay (s)	17.1	22.1	0.4	0.0
Lane LOS	C	C	A	
Approach Delay (s)	17.1	22.1	0.2	
Approach LOS	C	C		

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

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

8/13/2009

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	520	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	542	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	292	557	2	560	555	273	0			547		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	292	557	2	560	555	273	0			547		
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 %	99	99	100	100	96	100	100			100		
cM capacity (veh/h)	621	440	1086	409	441	730	1593			1019		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	15	19	276	276
Volume Left	8	0	5	0
Volume Right	0	2	0	5
cSH	528	462	1593	1700
Volume to Capacity	0.03	0.04	0.00	0.16
Queue Length 95th (ft)	2	3	0	0
Control Delay (s)	12.0	13.1	0.2	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.0	13.1	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		0.8		
Intersection Capacity Utilization		29.2%	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)	10	6	0	0	92	9	19	484	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	22	563	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	393	621	4	619	617	289	3			574		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	393	621	4	619	617	289	3			574		
tC, single (s)	7.9	6.9	7.3	7.9	6.9	7.3	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.3			2.2		
p0 queue free %	97	98	100	100	70	98	99			100		
cM capacity (veh/h)	373	359	1019	327	361	655	1571			992		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2
Volume Total	19	117	303	288
Volume Left	12	0	22	0
Volume Right	0	10	0	7
cSH	367	376	1571	1700
Volume to Capacity	0.05	0.31	0.01	0.17
Queue Length 95th (ft)	4	33	1	0
Control Delay (s)	15.3	18.9	0.6	0.0
Lane LOS	C	C	A	
Approach Delay (s)	15.3	18.9	0.3	
Approach LOS	C	C		

Intersection Summary				
Average Delay		3.7		
Intersection Capacity Utilization		31.8%	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	86	23	0	0	0	0	3	344	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	4	102	27	0	0	0	0	4	410	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	0.94	0.94	0.94	0.94	0.94		0.94					
vC, conflicting volume	439	432	213	230	437	7	423			7		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	273	265	32	50	271	7	256			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	4.1	3.4	2.2			2.3		
p0 queue free %	100	97	100	88	95	100	100			100		
cM capacity (veh/h)	561	567	931	845	581	1055	1223			1541		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	18	130	208	215
Volume Left	0	102	4	0
Volume Right	4	0	0	11
cSH	615	771	1541	1700
Volume to Capacity	0.03	0.17	0.00	0.13
Queue Length 95th (ft)	2	15	0	0
Control Delay (s)	11.0	10.6	0.1	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.0	10.6	0.1	
Approach LOS	B	B		

Intersection Summary				
Average Delay		2.8		
Intersection Capacity Utilization		31.4%	ICU Level of Service	A
Analysis Period (min)		15		

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

8/13/2009

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	406	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	437	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	473	466	227	251	472	4	449			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	473	466	227	251	472	4	449			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	98	100	100			99		
cM capacity (veh/h)	466	494	782	667	489	1080	1107			1576		

Direction, Lane #	SE 1	NW 1	SW 1	SW 2
Volume Total	15	29	229	231
Volume Left	0	17	11	0
Volume Right	2	0	0	13
cSH	521	581	1576	1700
Volume to Capacity	0.03	0.05	0.01	0.14
Queue Length 95th (ft)	2	4	1	0
Control Delay (s)	12.1	11.5	0.4	0.0
Lane LOS	B	B	A	
Approach Delay (s)	12.1	11.5	0.2	
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization		30.5%	ICU Level of Service	A
Analysis Period (min)		15		

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	0	13	360	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	383	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	453			0			468	446	229	238	481	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	453			0			468	446	229	238	481	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	94	100	80	91	100
cM capacity (veh/h)	1104			1565			446	506	780	660	481	1088

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total	205	262	33	176
Volume Left	14	0	0	131
Volume Right	0	70	1	0
cSH	1565	1700	512	603
Volume to Capacity	0.01	0.15	0.06	0.29
Queue Length 95th (ft)	1	0	5	30
Control Delay (s)	0.6	0.0	12.5	13.4
Lane LOS	A		B	B
Approach Delay (s)	0.2		12.5	13.4
Approach LOS			B	B

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
362: S Division Street & W Heron Street

8/13/2009

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	11	16	0	45	0	0	0	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	0	0	0	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	49			29			70	78	49	70	70	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	49			29			70	78	49	70	70	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)	1558			1584			922	658	1020	908	810	1040

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	29	49	0	5
Volume Left	0	0	0	5
Volume Right	17	0	0	0
cSH	1558	1584	1700	908
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	0.0	9.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	9.0
Approach LOS			A	A

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	13.3%	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	44	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	48	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	61	48	49			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	48	49			
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)	944	1020	1571			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	12	49
Volume Left	1	1	0
Volume Right	1	0	1
cSH	981	1571	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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	35	404	4	4	450	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	464	5	5	517	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	517			469			1123	1074	467	1082	1079	521
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	517			469			1123	1074	467	1082	1079	521
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			88	98	99	97	100	91
cM capacity (veh/h)	1004			1103			154	203	578	177	201	538

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1
Volume Total	40	469	5	524	28	55
Volume Left	40	0	5	0	18	6
Volume Right	0	5	0	7	6	49
cSH	1004	1700	1103	1700	189	444
Volume to Capacity	0.04	0.28	0.00	0.31	0.15	0.12
Queue Length 95th (ft)	3	0	0	0	13	11
Control Delay (s)	8.7	0.0	8.3	0.0	27.3	14.3
Lane LOS	A		A		D	B
Approach Delay (s)	0.7		0.1		27.3	14.3
Approach LOS					D	B

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	41.3%	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)	17	343	10	15	400	100	9	14	39	53	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	373	11	16	435	109	10	15	42	58	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	543			384			970	991	378	987	942	489
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	543			384			970	991	378	987	942	489
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	93	71	97	95
cM capacity (veh/h)	986			1132			201	227	643	197	255	581

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	402	560	67	93
Volume Left	18	16	10	58
Volume Right	11	109	42	29
cSH	986	1132	371	253
Volume to Capacity	0.02	0.01	0.18	0.37
Queue Length 95th (ft)	1	1	16	41
Control Delay (s)	0.6	0.4	16.9	27.3
Lane LOS	A	A	C	D
Approach Delay (s)	0.6	0.4	16.9	27.3
Approach LOS			C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	297	2	4	0	291	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	334	2	4	0	327	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	327			336			366	693	335	416	367	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	327			336			366	693	335	416	367	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	90	95	100	100	100
cM capacity (veh/h)	1205			588			582	360	707	476	552	1085

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	11	336	4	327	69
Volume Left	11	0	4	0	0
Volume Right	0	2	0	327	33
cSH	1205	1700	588	1700	470
Volume to Capacity	0.01	0.20	0.01	0.19	0.15
Queue Length 95th (ft)	1	0	1	0	13
Control Delay (s)	8.0	0.0	11.2	0.0	14.0
Lane LOS	A		B		B
Approach Delay (s)	0.3		0.2		14.0
Approach LOS					B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

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

8/13/2009

Movement	NBL2	NBL	NBR	SEL	SER	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Volume (veh/h)	82	0	58	0	0	0	31	85	120	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)	96	0	68	0	0	0	36	100	141	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			68		246	261	0	345	227	34
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			68		246	261	0	345	227	34
tC, single (s)	4.2			4.1		7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.3			2.2		3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	94			100		100	94	91	72	94	100
cM capacity (veh/h)	1566			1533		639	599	1068	505	634	1045

Direction, Lane #	NB 1	SE 1	NE 1	SW 1
Volume Total	165	0	136	179
Volume Left	96	0	0	141
Volume Right	68	0	100	0
cSH	1566	1700	883	528
Volume to Capacity	0.06	0.00	0.15	0.34
Queue Length 95th (ft)	5	0	14	37
Control Delay (s)	4.6	0.0	9.8	15.3
Lane LOS	A		A	C
Approach Delay (s)	4.6	0.0	9.8	15.3
Approach LOS			A	C

Intersection Summary			
Average Delay	10.1		
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	54	151	148	43	97	281
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	59	164	161	47	105	305
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			223		509	141
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			223		509	141
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			88		77	67
cM capacity (veh/h)			1358		460	912

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	223	208	411
Volume Left	0	161	105
Volume Right	164	0	305
cSH	1700	1358	729
Volume to Capacity	0.13	0.12	0.56
Queue Length 95th (ft)	0	10	89
Control Delay (s)	0.0	6.4	16.1
Lane LOS		A	C
Approach Delay (s)	0.0	6.4	16.1
Approach LOS			C

Intersection Summary			
Average Delay	9.5		
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Volume (veh/h)	0	1	0	0	1	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1	0	0	1	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1		1	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1		1	1
tC, single (s)			4.1		7.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.4	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1622		818	1084

Direction, Lane #	EB 1	WB 1	NE 1
Volume Total	1	0	1
Volume Left	0	0	1
Volume Right	1	0	0
cSH	1700	1700	818
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	9.4
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	343	34	15	443	31	48	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		0.99			0.99			1.00	0.85		0.97	
Flt Protected		1.00			1.00			0.96	1.00		0.97	
Satd. Flow (prot)		1746			1828			1794	1538		1749	
Flt Permitted		0.99			0.99			0.72	1.00		0.78	
Satd. Flow (perm)		1723			1804			1342	1538		1408	
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	369	37	16	476	33	52	9	27	34	9	14
RTOR Reduction (vph)	0	3	0	0	2	0	0	0	22	0	12	0
Lane Group Flow (vph)	0	415	0	0	523	0	0	61	5	0	45	0
Heavy Vehicles (%)	7%	8%	1%	2%	3%	2%	1%	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)		22.6			22.6			6.2	6.2		6.2	
Effective Green, g (s)		23.1			23.1			6.7	6.7		6.7	
Actuated g/C Ratio		0.61			0.61			0.18	0.18		0.18	
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)		1053			1102			238	273		250	
v/s Ratio Prot												
v/s Ratio Perm		0.24			c0.29			c0.05	0.00		0.03	
v/c Ratio		0.39			0.47			0.26	0.02		0.18	
Uniform Delay, d1		3.8			4.0			13.4	12.8		13.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2			0.3			0.6	0.0		0.4	
Delay (s)		4.0			4.4			14.0	12.9		13.6	
Level of Service		A			A			B	B		B	
Approach Delay (s)		4.0			4.4			13.6			13.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	37.8	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)	213	15	6	286	19	7
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)	242	17	7	325	22	8
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			259		581	242
vC1, stage 1 conf vol					242	
vC2, stage 2 conf vol					339	
vCu, unblocked vol			259		581	242
tC, single (s)			4.8		6.5	6.8
tC, 2 stage (s)					5.5	
tF (s)			2.8		3.6	3.9
p0 queue free %			99		97	99
cM capacity (veh/h)			1006		618	668

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	242	17	7	325	30
Volume Left	0	0	7	0	22
Volume Right	0	17	0	0	8
cSH	1700	1700	1006	1700	631
Volume to Capacity	0.14	0.01	0.01	0.19	0.05
Queue Length 95th (ft)	0	0	1	0	4
Control Delay (s)	0.0	0.0	8.6	0.0	11.0
Lane LOS			A		B
Approach Delay (s)	0.0		0.2		11.0
Approach LOS					B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	25.1%	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)	121	1419	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)		3346						3237			3402	
Flt Permitted		1.00						1.00			0.89	
Satd. Flow (perm)		3346						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	1526	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	1668	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)		2624						328			311	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.50									c0.03	
v/c Ratio		0.64						0.19			0.34	
Uniform Delay, d1		3.2						28.8			29.3	
Progression Factor		1.00						1.00			0.54	
Incremental Delay, d2		1.2						0.3			0.6	
Delay (s)		4.4						29.1			16.4	
Level of Service		A						C			B	
Approach Delay (s)		4.4			0.0			29.1			16.4	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	6.3	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	57.3%	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)	15	1455	76	0	0	0	0	90	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)		3336						1717			1621	
Flt Permitted		1.00						1.00			0.56	
Satd. Flow (perm)		3336						1717			933	
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	1712	89	0	0	0	0	106	145	93	98	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	1815	0	0	0	0	0	240	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)		44.6						16.1			16.1	
Effective Green, g (s)		44.6						16.1			16.1	
Actuated g/C Ratio		0.65						0.23			0.23	
Clearance Time (s)		4.0						4.0			4.0	
Vehicle Extension (s)		2.5						3.0			3.0	
Lane Grp Cap (vph)		2166						402			219	
v/s Ratio Prot								0.14				
v/s Ratio Perm		0.54									c0.20	
v/c Ratio		0.84						0.60			0.87	
Uniform Delay, d1		9.3						23.4			25.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		3.0						2.4			29.4	
Delay (s)		12.2						25.8			54.7	
Level of Service		B						C			D	
Approach Delay (s)		12.2			0.0			25.8			54.7	
Approach LOS		B			A			C			D	

Intersection Summary			
HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	68.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1454	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)		3353						1597			1606	
Flt Permitted		1.00						1.00			0.82	
Satd. Flow (perm)		3353						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	1499	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	1541	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)		37.8						4.6			4.6	
Effective Green, g (s)		38.3						5.1			5.1	
Actuated g/C Ratio		0.75						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)		2498						158			134	
v/s Ratio Prot								0.02				
v/s Ratio Perm		0.46									c0.04	
v/c Ratio		0.62						0.19			0.42	
Uniform Delay, d1		3.1						21.2			21.8	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.5						0.6			2.1	
Delay (s)		3.5						21.8			23.9	
Level of Service		A						C			C	
Approach Delay (s)		3.5			0.0			21.8			23.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	51.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	56	1477	30	0	0	0	0	40	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)	58	1523	31	0	0	0	0	41	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			1554			1677	1654	777	936	1669	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1554			1677	1654	777	936	1669	0
tC, single (s)	4.2			4.1			7.6	6.5	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 %	96			100			100	56	89	64	50	100
cM capacity (veh/h)	1614			422			37	94	338	127	94	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	819	792	79	92
Volume Left	58	0	0	45
Volume Right	0	31	38	0
cSH	1614	1700	144	108
Volume to Capacity	0.04	0.47	0.55	0.85
Queue Length 95th (ft)	3	0	69	124
Control Delay (s)	1.0	0.0	57.3	123.6
Lane LOS	A		F	F
Approach Delay (s)	0.5		57.3	123.6
Approach LOS			F	F

Intersection Summary			
Average Delay	9.4		
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	1157	12	0	0	0	0	368	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	3357						3426				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1752	3357						3426				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	1258	13	0	0	0	0	400	10	0	0	0
RTOR Reduction (vph)	48	1	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	62	1270	0	0	0	0	0	407	0	0	0	0
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	4%	5%	4%	2%	2%	2%
Parking (#/hr)		0										
Turn Type	Perm											
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)	26.2	26.2						11.7				
Effective Green, g (s)	27.2	27.2						12.7				
Actuated g/C Ratio	0.57	0.57						0.27				
Clearance Time (s)	5.0	5.0						5.0				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	995	1906						908				
v/s Ratio Prot		c0.38						c0.12				
v/s Ratio Perm	0.04											
v/c Ratio	0.06	0.67						0.45				
Uniform Delay, d1	4.6	7.2						14.7				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.0	0.9						0.4				
Delay (s)	4.7	8.1						15.0				
Level of Service	A	A						B				
Approach Delay (s)		7.8			0.0			15.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	47.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.9%	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)	17	1102	71	0	0	0	0	27	455	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					0.87	0.85		1.00	
Flt Protected		1.00	1.00					1.00	1.00		0.97	
Satd. Flow (prot)		2893	1300					1547	1519		1811	
Flt Permitted		1.00	1.00					1.00	1.00		0.63	
Satd. Flow (perm)		2893	1300					1547	1519		1164	
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	1185	76	0	0	0	0	29	489	45	34	0
RTOR Reduction (vph)	0	0	13	0	0	0	0	38	38	0	0	0
Lane Group Flow (vph)	0	1203	63	0	0	0	0	221	221	0	79	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	2%	2%	1%	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)		45.6	45.6					15.4	15.4		15.4	
Effective Green, g (s)		46.1	46.1					15.9	15.9		15.9	
Actuated g/C Ratio		0.66	0.66					0.23	0.23		0.23	
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)		1905	856					351	345		264	
v/s Ratio Prot		c0.42						0.14				
v/s Ratio Perm			0.05						c0.15		0.07	
v/c Ratio		0.63	0.07					0.63	0.64		0.30	
Uniform Delay, d1		7.0	4.3					24.4	24.5		22.4	
Progression Factor		0.44	0.33					1.00	1.00		1.00	
Incremental Delay, d2		1.4	0.2					3.7	4.0		0.6	
Delay (s)		4.5	1.5					28.1	28.5		23.1	
Level of Service		A	A					C	C		C	
Approach Delay (s)		4.4			0.0			28.3			23.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	24	1072	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)		2882						1314			1459	
Flt Permitted		1.00						1.00			0.86	
Satd. Flow (perm)		2882						1314			1278	
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	1128	26	0	0	0	0	13	93	8	11	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	52	0	0	0	0
Lane Group Flow (vph)	0	1178	0	0	0	0	0	54	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)		54.5						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)		2244						141			137	
v/s Ratio Prot								c0.04				
v/s Ratio Perm		0.41									0.01	
v/c Ratio		0.52						0.38			0.14	
Uniform Delay, d1		2.9						29.1			28.3	
Progression Factor		0.41						1.00			1.00	
Incremental Delay, d2		0.6						1.7			0.5	
Delay (s)		1.8						30.8			28.8	
Level of Service		A						C			C	
Approach Delay (s)		1.8			0.0			30.8			28.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.4%	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	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	27	176	4	0
Lane Group Flow (vph)	0	992	0	0	0	0	0	0	4	102	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)		28.7							9.5	18.3	18.3	
Effective Green, g (s)		29.2							10.0	18.8	18.8	
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)		1204							184	451	382	
v/s Ratio Prot		c0.34							c0.00	0.06	c0.34	
v/s Ratio Perm												
v/c Ratio		0.82							0.02	0.23	1.25	
Uniform Delay, d1		18.1							25.8	19.9	25.6	
Progression Factor		1.09							1.00	1.00	1.00	
Incremental Delay, d2		5.9							0.2	1.2	134.5	
Delay (s)		25.8							26.0	21.1	160.1	
Level of Service		C							C	C	F	
Approach Delay (s)		25.8			0.0			26.0			109.3	
Approach LOS		C			A			C			F	

Intersection Summary			
HCM Average Control Delay	61.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.83		
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			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	8	395	12	0	0	0	0	83	26	469	78	0
Ideal Flow (vphpl)	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						0.97		1.00	1.00	
Flt Protected		1.00						1.00		0.95	0.97	
Satd. Flow (prot)		2854						1452		1681	1371	
Flt Permitted		1.00						1.00		0.95	0.97	
Satd. Flow (perm)		2854						1452		1681	1371	
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	420	13	0	0	0	0	88	28	499	83	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	17	0	0	0	0
Lane Group Flow (vph)	0	439	0	0	0	0	0	99	0	289	293	0
Heavy Vehicles (%)	6%	7%	6%	2%	2%	2%	2%	1%	2%	2%	1%	2%
Parking (#/hr)		40						20			20	
Turn Type	Perm									Split		
Protected Phases		6						8		7	7	
Permitted Phases	6											
Actuated Green, G (s)		17.4						8.1		31.0	31.0	
Effective Green, g (s)		17.9						8.6		31.5	31.5	
Actuated g/C Ratio		0.26						0.12		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)		730						178		756	617	
v/s Ratio Prot								c0.07		0.17	c0.21	
v/s Ratio Perm		0.15										
v/c Ratio		0.60						0.56		0.38	0.47	
Uniform Delay, d1		22.9						28.9		12.8	13.5	
Progression Factor		1.00						1.01		1.00	1.00	
Incremental Delay, d2		1.4						3.8		1.5	2.6	
Delay (s)		24.3						32.9		14.3	16.1	
Level of Service		C						C		B	B	
Approach Delay (s)		24.3			0.0			32.9			15.2	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
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	319	0	512	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)		1774		2091		
Flt Permitted		1.00		1.00		
Satd. Flow (perm)		1774		2091		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	354	0	569	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	354	0	569	0	0
Confl. Peds. (#/hr)					1	2
Heavy Vehicles (%)	4%	5%	2%	3%	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)		1319		1555		
v/s Ratio Prot		0.20		c0.27		
v/s Ratio Perm						
v/c Ratio		0.27		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	37.6%	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	13	1033	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)					3491			3379			2995	
Flt Permitted					1.00			0.90			1.00	
Satd. Flow (perm)					3491			3048			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	1076	24	19	174	0	0	96	258
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	52	0
Lane Group Flow (vph)	0	0	0	0	1113	0	0	193	0	0	302	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)					48.2			12.8			12.8	
Effective Green, g (s)					48.7			13.3			13.3	
Actuated g/C Ratio					0.70			0.19			0.19	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					2429			579			569	
v/s Ratio Prot											c0.10	
v/s Ratio Perm					0.32			0.06				
v/c Ratio					0.46			0.33			0.53	
Uniform Delay, d1					4.8			24.5			25.5	
Progression Factor					1.43			1.03			1.00	
Incremental Delay, d2					0.6			0.3			1.0	
Delay (s)					7.4			25.5			26.5	
Level of Service					A			C			C	
Approach Delay (s)		0.0			7.4			25.5			26.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
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)	0	0	0	14	1341	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)					3354			1690			1710	1615
Flt Permitted					1.00			0.99			1.00	1.00
Satd. Flow (perm)					3354			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	1427	20	14	414	0	0	55	296
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	35
Lane Group Flow (vph)	0	0	0	0	1460	0	0	428	0	0	55	261
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					0.44			c0.25				0.16
v/c Ratio					0.71			0.94			0.12	0.60
Uniform Delay, d1					9.2			24.9			19.2	22.2
Progression Factor					0.70			1.00			1.00	1.00
Incremental Delay, d2					2.0			29.3			0.5	5.9
Delay (s)					8.4			54.2			19.7	28.0
Level of Service					A			D			B	C
Approach Delay (s)		0.0			8.4			54.2			26.7	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM Average Control Delay	20.1	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	86.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	44	1319	94	38	88	0	0	215	112
Ideal Flow (vphpl)	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			0.95	
Flt Protected					1.00	1.00		0.99			1.00	
Satd. Flow (prot)					3568	1553		1829			1786	
Flt Permitted					1.00	1.00		0.77			1.00	
Satd. Flow (perm)					3568	1553		1428			1786	
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	1388	99	40	93	0	0	226	118
RTOR Reduction (vph)	0	0	0	0	0	41	0	0	0	0	25	0
Lane Group Flow (vph)	0	0	0	0	1434	58	0	133	0	0	319	0
Confl. Peds. (#/hr)	5		4	4		5	2		3	3		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	2%	3%	1%	1%	1%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)					33.7	33.7		16.2			16.2	
Effective Green, g (s)					33.7	33.7		16.2			16.2	
Actuated g/C Ratio					0.58	0.58		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)					2077	904		400			500	
v/s Ratio Prot											c0.18	
v/s Ratio Perm					0.40	0.04		0.09				
v/c Ratio					0.69	0.06		0.33			0.64	
Uniform Delay, d1					8.5	5.3		16.6			18.3	
Progression Factor					1.00	1.00		1.00			1.00	
Incremental Delay, d2					1.0	0.0		0.5			2.7	
Delay (s)					9.5	5.3		17.0			20.9	
Level of Service					A	A		B			C	
Approach Delay (s)		0.0			9.2			17.0			20.9	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	34	1512	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	1609	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	1650	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					0.50			c0.02				
v/c Ratio					0.66			0.37			0.29	
Uniform Delay, d1					2.4			18.6			18.5	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.6			3.1			2.0	
Delay (s)					3.0			21.7			20.5	
Level of Service					A			C			C	
Approach Delay (s)		0.0			3.0			21.7			20.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	3.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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

8/13/2009

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	43	1401	12	62	21	0	0	18	17
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	1540	13	68	23	0	0	20	19
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1553			0			893	1647	0	1652	1641	776
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1553			0			893	1647	0	1652	1641	776
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			63	76	100	100	80	95
cM capacity (veh/h)	423			1622			185	96	1084	53	98	344

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	817	783	91	38
Volume Left	47	0	68	0
Volume Right	0	13	0	19
cSH	1622	1700	150	150
Volume to Capacity	0.03	0.46	0.61	0.26
Queue Length 95th (ft)	2	0	81	24
Control Delay (s)	0.8	0.0	60.6	37.0
Lane LOS	A		F	E
Approach Delay (s)	0.4		60.6	37.0
Approach LOS			F	E

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1403	2	430	18	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)					3362		1588	1599				1611
Flt Permitted					1.00		0.95	0.96				1.00
Satd. Flow (perm)					3362		1588	1599				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	1576	2	483	20	0	0	0	9
RTOR Reduction (vph)	0	0	0	0	0	0	150	150	0	0	0	9
Lane Group Flow (vph)	0	0	0	0	1578	0	101	102	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	8%	7%	7%	2%	2%	2%
Parking (#/hr)					0							
Turn Type							Perm					custom
Protected Phases					2			4				
Permitted Phases							4					3
Actuated Green, G (s)					34.3		9.5	9.5				0.8
Effective Green, g (s)					35.3		10.5	10.5				1.8
Actuated g/C Ratio					0.59		0.18	0.18				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)					1991		280	282				49
v/s Ratio Prot					c0.47							
v/s Ratio Perm							0.06	0.06				c0.00
v/c Ratio					0.79		0.36	0.36				0.01
Uniform Delay, d1					9.3		21.6	21.6				28.0
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					2.2		0.8	0.8				0.0
Delay (s)					11.6		22.4	22.4				28.1
Level of Service					B		C	C				C
Approach Delay (s)		0.0			11.6			22.4			28.1	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	59.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Volume (veh/h)	0	0	1424	181	0	87
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	1499	191	0	92
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1499				1499	749
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1499				1499	749
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)	443				111	350

Direction, Lane #	NW 1	NW 2	NW 3	SW 1
Volume Total	749	749	191	92
Volume Left	0	0	0	0
Volume Right	0	0	191	92
cSH	1700	1700	1700	350
Volume to Capacity	0.44	0.44	0.11	0.26
Queue Length 95th (ft)	0	0	0	26
Control Delay (s)	0.0	0.0	0.0	18.9
Lane LOS				C
Approach Delay (s)	0.0			18.9
Approach LOS				C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	SBL	SBR	NWL	NWR	NEL	NER
Lane Configurations								
Volume (veh/h)	692	1056	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)	713	1089	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			713	713	713	1802	1802	
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol			713	713	713	1802	1802	
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	97	0	100	
cM capacity (veh/h)			357	432	347	80	342	

Direction, Lane #	WB 1	WB 2	NW 1	NW 2
Volume Total	1076	726	9	103
Volume Left	0	0	9	0
Volume Right	363	726	0	0
cSH	1700	1700	347	80
Volume to Capacity	0.63	0.43	0.03	1.30
Queue Length 95th (ft)	0	0	2	196
Control Delay (s)	0.0	0.0	15.7	292.3
Lane LOS			C	F
Approach Delay (s)	0.0		269.4	
Approach LOS			F	

Intersection Summary			
Average Delay	15.8		
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	91	0	0	1178	0	506
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)	1787			3505		2787
Flt Permitted	0.95			1.00		1.00
Satd. Flow (perm)	1787			3505		2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	99	0	0	1280	0	550
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	99	0	0	1280	0	550
Heavy Vehicles (%)	1%	2%	3%	3%	2%	2%
Turn Type						Free
Protected Phases	3 8			1 2 5		
Permitted Phases						Free
Actuated Green, G (s)	15.4			46.4		70.8
Effective Green, g (s)	15.9			46.9		70.8
Actuated g/C Ratio	0.22			0.66		1.00
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	401			2322		2787
v/s Ratio Prot	c0.06			c0.37		
v/s Ratio Perm						c0.20
v/c Ratio	0.25			0.55		0.20
Uniform Delay, d1	22.5			6.4		0.0
Progression Factor	1.00			1.00		1.00
Incremental Delay, d2	0.1			0.9		0.2
Delay (s)	22.7			7.2		0.2
Level of Service	C			A		A
Approach Delay (s)	22.7			7.2	0.2	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.8	Sum of lost time (s)	4.0
Intersection Capacity Utilization	44.3%	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	606	611	506	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)			1678	1845	3469	
Flt Permitted			0.37	1.00	1.00	
Satd. Flow (perm)			650	1845	3469	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	631	636	527	39
RTOR Reduction (vph)	0	0	0	0	5	0
Lane Group Flow (vph)	0	0	631	636	561	0
Heavy Vehicles (%)	2%	2%	4%	3%	3%	3%
Turn Type			D.P+P			
Protected Phases			5	1 2 3	6 3	
Permitted Phases			6 3			
Actuated Green, G (s)			51.5	56.0	27.3	
Effective Green, g (s)			52.5	56.5	27.8	
Actuated g/C Ratio			0.74	0.80	0.39	
Clearance Time (s)			4.5			
Vehicle Extension (s)			0.2			
Lane Grp Cap (vph)			841	1472	1362	
v/s Ratio Prot			c0.26	0.34	0.16	
v/s Ratio Perm			c0.29			
v/c Ratio			0.75	0.43	0.41	
Uniform Delay, d1			4.6	2.2	15.6	
Progression Factor			0.49	0.13	1.00	
Incremental Delay, d2			2.9	0.8	0.1	
Delay (s)			5.2	1.0	15.6	
Level of Service			A	A	B	
Approach Delay (s)	0.0			3.1	15.6	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.8	Sum of lost time (s)	18.3
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection has too many legs for HCM analysis.