

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗				↑
Traffic Vol, veh/h	295	280	0	0	0	230
Future Vol, veh/h	295	280	0	0	0	230
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	16974	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	5	1	0	0	0	2
Mvmt Flow	339	322	0	0	0	264

Major/Minor	Minor1		Major2	
Conflicting Flow All	264	0	-	-
Stage 1	0	-	-	-
Stage 2	264	-	-	-
Critical Hdwy	6.45	6.21	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-
Follow-up Hdwy	3.545	3.309	-	-
Pot Cap-1 Maneuver	719	-	0	-
Stage 1	-	-	0	-
Stage 2	773	-	0	-
Platoon blocked, %				
Mov Cap-1 Maneuver	719	-	-	-
Mov Cap-2 Maneuver	719	-	-	-
Stage 1	-	-	-	-
Stage 2	773	-	-	-

Approach	WB	SB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	WBLn1WBLn2	SBT
Capacity (veh/h)	719	-
HCM Lane V/C Ratio	0.472	-
HCM Control Delay (s)	14.4	-
HCM Lane LOS	B	-
HCM 95th %tile Q(veh)	2.5	-

Intersection						
Int Delay, s/veh	4.6					
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations				↑↑	↘	
Traffic Vol, veh/h	0	0	0	350	225	0
Future Vol, veh/h	0	0	0	350	225	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	380	245	0

Major/Minor	Major2	Minor1
Conflicting Flow All	-	- 190
Stage 1	-	- 0
Stage 2	-	- 190
Critical Hdwy	-	- 6.84
Critical Hdwy Stg 1	-	- -
Critical Hdwy Stg 2	-	- 5.84
Follow-up Hdwy	-	- 3.52
Pot Cap-1 Maneuver	0	- 781
Stage 1	0	- - 0
Stage 2	0	- 823
Platoon blocked, %		-
Mov Cap-1 Maneuver	-	- 781
Mov Cap-2 Maneuver	-	- 781
Stage 1	-	- -
Stage 2	-	- 823

Approach	WB	NE
HCM Control Delay, s	0	11.7
HCM LOS		B

Minor Lane/Major Mvmt	NELn1	WBT
Capacity (veh/h)	781	-
HCM Lane V/C Ratio	0.313	-
HCM Control Delay (s)	11.7	-
HCM Lane LOS	B	-
HCM 95th %tile Q(veh)	1.3	-

HCM Signalized Intersection Capacity Analysis
 40: 6th St/I-5 SB Off-Ramp & Morgan Ln & Scoville Rd

No Build 2040 PM Peak
 12/10/2018



Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	SWL2	SWL	SWR
Lane Configurations	↑	↑	↑	↑		↑↓			↑↓	↑↓
Traffic Volume (vph)	175	265	180	270	25	660	35	50	360	115
Future Volume (vph)	175	265	180	270	25	660	35	50	360	115
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00		0.95			0.97	
Frpb, ped/bikes	1.00	0.98	1.00	1.00		1.00			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00			1.00	
Frt	1.00	0.85	1.00	1.00		0.99			0.97	
Flt Protected	1.00	1.00	0.95	1.00		1.00			0.96	
Satd. Flow (prot)	1699	1418	1629	1667		3203			3059	
Flt Permitted	1.00	1.00	0.33	1.00		1.00			0.96	
Satd. Flow (perm)	1699	1418	560	1667		3203			3059	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	179	270	184	276	26	673	36	51	367	117
RTOR Reduction (vph)	0	116	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	179	154	184	276	0	732	0	0	535	0
Confl. Peds. (#/hr)		3	3		2		2	2		2
Heavy Vehicles (%)	3%	3%	2%	5%	0%	3%	0%	0%	4%	0%
Turn Type	NA	Perm	pm+pt	NA	Split	NA		Prot	Prot	
Protected Phases	8		7	4	2	2		6	6	
Permitted Phases		8	4							
Actuated Green, G (s)	15.9	15.9	34.6	34.6		32.0			25.6	
Effective Green, g (s)	16.4	16.4	35.1	35.1		33.4			27.0	
Actuated g/C Ratio	0.15	0.15	0.33	0.33		0.31			0.25	
Clearance Time (s)	4.5	4.5	4.5	4.5		5.4			5.4	
Vehicle Extension (s)	2.5	2.5	2.5	2.5		4.4			4.3	
Lane Grp Cap (vph)	259	216	329	544		995			768	
v/s Ratio Prot	0.11		c0.08	0.17		c0.23			c0.17	
v/s Ratio Perm		c0.11	0.11							
v/c Ratio	0.69	0.71	0.56	0.51		0.74			0.70	
Uniform Delay, d1	43.2	43.3	28.1	29.2		33.1			36.5	
Progression Factor	1.00	1.00	1.00	1.00		1.00			1.00	
Incremental Delay, d2	7.1	9.9	1.7	0.5		3.2			3.1	
Delay (s)	50.3	53.2	29.7	29.8		36.3			39.6	
Level of Service	D	D	C	C		D			D	
Approach Delay (s)	52.0			29.7		36.3			39.6	
Approach LOS	D			C		D			D	

Intersection Summary				
HCM 2000 Control Delay		39.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio		0.72		
Actuated Cycle Length (s)		107.5	Sum of lost time (s)	18.8
Intersection Capacity Utilization		72.8%	ICU Level of Service	C
Analysis Period (min)		15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
50: 7th St & Morgan Ln/I-5 SB On-Ramp

No Build 2040 PM Peak
12/10/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	80	175	0	0	0	0	445	840	280	0	0	0	
Future Volume (vph)	80	175	0	0	0	0	445	840	280	0	0	0	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Total Lost time (s)	4.0	4.0						4.0	4.0				
Lane Util. Factor	1.00	1.00						0.95	1.00				
Frpb, ped/bikes	1.00	1.00						1.00	0.98				
Flpb, ped/bikes	1.00	1.00						1.00	1.00				
Frt	1.00	1.00						1.00	0.85				
Flt Protected	0.95	1.00						0.98	1.00				
Satd. Flow (prot)	1623	1716						3189	1423				
Flt Permitted	0.95	1.00						0.98	1.00				
Satd. Flow (perm)	1623	1716						3189	1423				
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	
Adj. Flow (vph)	93	203	0	0	0	0	517	977	326	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	120	0	0	0	
Lane Group Flow (vph)	93	203	0	0	0	0	0	1494	206	0	0	0	
Confl. Peds. (#/hr)	5						3		3				
Heavy Vehicles (%)	2%	2%	0%	0%	0%	0%	3%	2%	2%	0%	0%	0%	
Turn Type	Perm	NA					Perm	NA	Perm				
Protected Phases		4						2					
Permitted Phases	4						2		2				
Actuated Green, G (s)	12.4	12.4						34.3	34.3				
Effective Green, g (s)	12.9	12.9						35.8	35.8				
Actuated g/C Ratio	0.23	0.23						0.63	0.63				
Clearance Time (s)	4.5	4.5						5.5	5.5				
Vehicle Extension (s)	2.5	2.5						5.2	5.2				
Lane Grp Cap (vph)	369	390						2013	898				
v/s Ratio Prot		c0.12											
v/s Ratio Perm	0.06							0.47	0.14				
v/c Ratio	0.25	0.52						0.74	0.23				
Uniform Delay, d1	17.9	19.2						7.2	4.5				
Progression Factor	1.00	1.00						1.00	1.00				
Incremental Delay, d2	0.3	1.0						1.9	0.3				
Delay (s)	18.2	20.1						9.1	4.8				
Level of Service	B	C						A	A				
Approach Delay (s)		19.5			0.0			8.3			0.0		
Approach LOS		B			A			A			A		
Intersection Summary													
HCM 2000 Control Delay			9.9									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.68										
Actuated Cycle Length (s)			56.7									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

HCM Signalized Intersection Capacity Analysis
60: 6th St & Hillcrest Dr

No Build 2040 PM Peak
12/10/2018






















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗		↖	↖			↖			↖↗↘	
Traffic Volume (vph)	0	90	160	195	145	0	0	0	0	170	1255	45
Future Volume (vph)	0	90	160	195	145	0	0	0	0	170	1255	45
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0		4.0	4.0						4.0	
Lane Util. Factor		1.00		1.00	1.00						0.91	
Frbp, ped/bikes		0.99		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		1.00	1.00						1.00	
Frt		0.91		1.00	1.00						1.00	
Flt Protected		1.00		0.95	1.00						0.99	
Satd. Flow (prot)		1575		1662	1750						4720	
Flt Permitted		1.00		0.55	1.00						0.99	
Satd. Flow (perm)		1575		965	1750						4720	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	95	168	205	153	0	0	0	0	179	1321	47
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	247	0	205	153	0	0	0	0	0	1542	0
Confl. Peds. (#/hr)			1	1								1
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
Turn Type		NA		Perm	NA						Perm	NA
Protected Phases		8			4							6
Permitted Phases				4						6		
Actuated Green, G (s)		16.0		16.0	16.0						22.5	
Effective Green, g (s)		16.0		16.0	16.0						22.5	
Actuated g/C Ratio		0.34		0.34	0.34						0.48	
Clearance Time (s)		4.0		4.0	4.0						4.0	
Vehicle Extension (s)		2.5		2.5	2.5						3.9	
Lane Grp Cap (vph)		541		332	602						2283	
v/s Ratio Prot		0.16			0.09							
v/s Ratio Perm				c0.21							0.33	
v/c Ratio		0.46		0.62	0.25						0.68	
Uniform Delay, d1		11.9		12.7	11.0						9.2	
Progression Factor		1.00		1.00	1.00						1.00	
Incremental Delay, d2		0.4		2.9	0.2						0.9	
Delay (s)		12.3		15.6	11.1						10.1	
Level of Service		B		B	B						B	
Approach Delay (s)		12.3			13.7			0.0			10.1	
Approach LOS		B			B			A			B	
Intersection Summary												
HCM 2000 Control Delay			10.9			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			46.5			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			69.0%			ICU Level of Service				C		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
70: 7th St & Hillcrest Dr

No Build 2040 PM Peak
12/10/2018

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations								  					
Traffic Volume (vph)	160	100	0	0	70	85	255	1520	70	0	0	0	
Future Volume (vph)	160	100	0	0	70	85	255	1520	70	0	0	0	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0					
Lane Util. Factor	1.00	1.00			1.00	1.00		0.91					
Frpb, ped/bikes	1.00	1.00			1.00	0.98		1.00					
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00					
Frt	1.00	1.00			1.00	0.85		0.99					
Flt Protected	0.95	1.00			1.00	1.00		0.99					
Satd. Flow (prot)	1609	1750			1750	1464		4671					
Flt Permitted	0.70	1.00			1.00	1.00		0.99					
Satd. Flow (perm)	1194	1750			1750	1464		4671					
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)	184	115	0	0	80	98	293	1747	80	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	24	0	5	0	0	0	0	
Lane Group Flow (vph)	184	115	0	0	80	74	0	2115	0	0	0	0	
Confl. Peds. (#/hr)	4					4	4		6				
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	
Turn Type	Perm	NA			NA	Perm	Perm	NA					
Protected Phases		8			4			2					
Permitted Phases	8					4	2						
Actuated Green, G (s)	14.0	14.0			14.0	14.0		36.2					
Effective Green, g (s)	14.0	14.0			14.0	14.0		37.2					
Actuated g/C Ratio	0.24	0.24			0.24	0.24		0.63					
Clearance Time (s)	4.0	4.0			4.0	4.0		5.0					
Vehicle Extension (s)	2.5	2.5			2.5	2.5		5.0					
Lane Grp Cap (vph)	282	413			413	346		2935					
v/s Ratio Prot		0.07			0.05								
v/s Ratio Perm	c0.15					0.05		0.45					
v/c Ratio	0.65	0.28			0.19	0.21		0.72					
Uniform Delay, d1	20.4	18.5			18.1	18.2		7.5					
Progression Factor	1.00	1.00			1.00	1.00		1.00					
Incremental Delay, d2	4.8	0.3			0.2	0.2		1.1					
Delay (s)	25.2	18.7			18.3	18.4		8.6					
Level of Service	C	B			B	B		A					
Approach Delay (s)		22.7			18.3			8.6			0.0		
Approach LOS		C			B			A			A		
Intersection Summary													
HCM 2000 Control Delay			10.9		HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio			0.70										
Actuated Cycle Length (s)			59.2		Sum of lost time (s)				8.0				
Intersection Capacity Utilization			69.0%		ICU Level of Service				C				
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
80: 6th St & Savage St

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔						↔↔↔	
Traffic Volume (vph)	0	65	55	150	65	0	0	0	0	95	1660	40
Future Volume (vph)	0	65	55	150	65	0	0	0	0	95	1660	40
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0		4.0	4.0						4.0	
Lane Util. Factor		1.00		1.00	1.00						0.91	
Frt		0.94		1.00	1.00						1.00	
Flt Protected		1.00		0.95	1.00						1.00	
Satd. Flow (prot)		1642		1662	1750						4749	
Flt Permitted		1.00		0.65	1.00						1.00	
Satd. Flow (perm)		1642		1143	1750						4749	
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	68	57	156	68	0	0	0	0	99	1729	42
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	109	0	156	68	0	0	0	0	0	1868	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type		NA		Perm	NA						Perm	NA
Protected Phases		8			4							6
Permitted Phases				4						6		
Actuated Green, G (s)		14.6		14.6	14.6						52.4	
Effective Green, g (s)		14.6		14.6	14.6						52.4	
Actuated g/C Ratio		0.19		0.19	0.19						0.70	
Clearance Time (s)		4.0		4.0	4.0						4.0	
Vehicle Extension (s)		2.5		2.5	2.5						0.2	
Lane Grp Cap (vph)		319		222	340						3317	
v/s Ratio Prot		0.07			0.04							
v/s Ratio Perm				0.14							0.39	
v/c Ratio		0.34		0.70	0.20						0.56	
Uniform Delay, d1		26.1		28.2	25.3						5.6	
Progression Factor		1.00		0.90	0.88						1.00	
Incremental Delay, d2		0.5		8.5	0.2						0.7	
Delay (s)		26.5		33.9	22.4						6.3	
Level of Service		C		C	C						A	
Approach Delay (s)		26.5			30.4			0.0			6.3	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			9.9			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			64.3%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 90: 7th St & Savage St

No Build 2040 PM Peak
 12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↔			↔↑↑				
Traffic Volume (vph)	90	100	0	0	60	65	120	1570	60	0	0	0
Future Volume (vph)	90	100	0	0	60	65	120	1570	60	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0			4.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			0.91				
Frt	1.00	1.00			0.93			0.99				
Flt Protected	0.95	1.00			1.00			1.00				
Satd. Flow (prot)	1662	1750			1627			4695				
Flt Permitted	0.58	1.00			1.00			1.00				
Satd. Flow (perm)	1021	1750			1627			4695				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	109	0	0	65	71	130	1707	65	0	0	0
RTOR Reduction (vph)	0	0	0	0	18	0	0	3	0	0	0	0
Lane Group Flow (vph)	98	109	0	0	118	0	0	1899	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8			4			2				
Permitted Phases	8						2					
Actuated Green, G (s)	10.1	10.1			10.1			56.9				
Effective Green, g (s)	10.1	10.1			10.1			56.9				
Actuated g/C Ratio	0.13	0.13			0.13			0.76				
Clearance Time (s)	4.0	4.0			4.0			4.0				
Vehicle Extension (s)	2.5	2.5			2.5			0.2				
Lane Grp Cap (vph)	137	235			219			3561				
v/s Ratio Prot		0.06			0.07							
v/s Ratio Perm	c0.10							0.40				
v/c Ratio	0.72	0.46			0.54			0.53				
Uniform Delay, d1	31.1	30.0			30.3			3.7				
Progression Factor	1.01	1.01			1.00			1.09				
Incremental Delay, d2	14.6	1.0			2.0			0.5				
Delay (s)	46.0	31.1			32.2			4.5				
Level of Service	D	C			C			A				
Approach Delay (s)		38.2			32.2			4.5			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
100: 6th St & Evelyn Ave

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔↔↔	
Traffic Volume (vph)	0	10	30	40	20	0	0	0	0	35	1865	50
Future Volume (vph)	0	10	30	40	20	0	0	0	0	35	1865	50
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.90			1.00						1.00	
Flt Protected		1.00			0.97						1.00	
Satd. Flow (prot)		1573			1694						4755	
Flt Permitted		1.00			0.77						1.00	
Satd. Flow (perm)		1573			1354						4755	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	11	33	43	22	0	0	0	0	38	2027	54
RTOR Reduction (vph)	0	11	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	33	0	0	65	0	0	0	0	0	2117	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		8			4						6	
Permitted Phases				4						6		
Actuated Green, G (s)		7.8			7.8						59.2	
Effective Green, g (s)		7.8			7.8						59.2	
Actuated g/C Ratio		0.10			0.10						0.79	
Clearance Time (s)		4.0			4.0						4.0	
Vehicle Extension (s)		2.5			2.5						0.2	
Lane Grp Cap (vph)		163			140						3753	
v/s Ratio Prot		0.02										
v/s Ratio Perm					c0.05						0.45	
v/c Ratio		0.20			0.46						0.56	
Uniform Delay, d1		30.8			31.6						3.0	
Progression Factor		1.00			0.64						0.52	
Incremental Delay, d2		0.5			1.5						0.5	
Delay (s)		31.2			21.9						2.1	
Level of Service		C			C						A	
Approach Delay (s)		31.2			21.9			0.0			2.1	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			3.3		HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			75.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			58.0%		ICU Level of Service					B		
Analysis Period (min)			15									
c Critical Lane Group												

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↖↖	
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	16974	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	-	1	-	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.94	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.32	-	-
Pot Cap-1 Maneuver	0	1083	-	0
Stage 1	0	-	-	0
Stage 2	0	-	-	0
Platoon blocked, %			-	
Mov Cap-1 Maneuver	-	1083	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	0	0
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	SBT
Capacity (veh/h)	-	-
HCM Lane V/C Ratio	-	-
HCM Control Delay (s)	0	-
HCM Lane LOS	A	-
HCM 95th %tile Q(veh)	-	-

HCM Signalized Intersection Capacity Analysis
110: 7th St & Evelyn Ave

No Build 2040 PM Peak
12/10/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↑↑↑			
Traffic Volume (vph)	0	25	1700	15	0	0
Future Volume (vph)	0	25	1700	15	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		1.00	0.91			
Frt		0.86	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		1514	4725			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		1514	4725			
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	27	1868	16	0	0
RTOR Reduction (vph)	0	26	1	0	0	0
Lane Group Flow (vph)	0	1	1883	0	0	0
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Turn Type		Prot	NA			
Protected Phases		8	2			
Permitted Phases						
Actuated Green, G (s)		2.0	55.1			
Effective Green, g (s)		2.0	55.1			
Actuated g/C Ratio		0.03	0.73			
Clearance Time (s)		4.0	4.0			
Vehicle Extension (s)		0.2	0.2			
Lane Grp Cap (vph)		40	3471			
v/s Ratio Prot		c0.00	c0.40			
v/s Ratio Perm						
v/c Ratio		0.02	0.54			
Uniform Delay, d1		35.5	4.4			
Progression Factor		1.00	1.30			
Incremental Delay, d2		0.1	0.5			
Delay (s)		35.6	6.2			
Level of Service		D	A			
Approach Delay (s)	35.6		6.2		0.0	
Approach LOS	D		A		A	
Intersection Summary						
HCM 2000 Control Delay			6.6	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			75.0	Sum of lost time (s)		12.0
Intersection Capacity Utilization			46.9%	ICU Level of Service		A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
115: 7th St & Evelyn Ave

No Build 2040 PM Peak
12/10/2018























Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↶			↷↷↷		
Traffic Volume (vph)	50	0	70	1655	0	0
Future Volume (vph)	50	0	70	1655	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0			4.0		
Lane Util. Factor	1.00			0.91		
Frt	1.00			1.00		
Flt Protected	0.95			1.00		
Satd. Flow (prot)	1662			4723		
Flt Permitted	0.95			1.00		
Satd. Flow (perm)	1662			4723		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	55	0	77	1819	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	55	0	0	1896	0	0
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%
Turn Type	Prot		Split	NA		
Protected Phases	4		2	2		
Permitted Phases						
Actuated Green, G (s)	5.9			55.1		
Effective Green, g (s)	5.9			55.1		
Actuated g/C Ratio	0.08			0.73		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	0.2			0.2		
Lane Grp Cap (vph)	130			3469		
v/s Ratio Prot	c0.03			c0.40		
v/s Ratio Perm						
v/c Ratio	0.42			0.55		
Uniform Delay, d1	32.9			4.4		
Progression Factor	1.10			0.05		
Incremental Delay, d2	0.8			0.5		
Delay (s)	36.9			0.7		
Level of Service	D			A		
Approach Delay (s)	36.9			0.7	0.0	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	1.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			




















HCM Signalized Intersection Capacity Analysis
120: 6th St & A St

No Build 2040 PM Peak
12/10/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											  	
Traffic Volume (vph)	0	160	140	130	265	0	0	0	0	110	1800	130
Future Volume (vph)	0	160	140	130	265	0	0	0	0	110	1800	130
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0						4.0	4.0
Lane Util. Factor		1.00	1.00	1.00	1.00						0.91	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)		1750	1488	1662	1750						4764	1488
Flt Permitted		1.00	1.00	0.51	1.00						1.00	1.00
Satd. Flow (perm)		1750	1488	886	1750						4764	1488
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	174	152	141	288	0	0	0	0	120	1957	141
RTOR Reduction (vph)	0	0	59	0	0	0	0	0	0	0	0	42
Lane Group Flow (vph)	0	174	93	141	288	0	0	0	0	0	2077	99
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		4		3	8						6	
Permitted Phases			4	8						6		6
Actuated Green, G (s)		22.0	22.0	32.8	32.8						34.2	34.2
Effective Green, g (s)		22.0	22.0	32.8	32.8						34.2	34.2
Actuated g/C Ratio		0.29	0.29	0.44	0.44						0.46	0.46
Clearance Time (s)		4.0	4.0	4.0	4.0						4.0	4.0
Vehicle Extension (s)		0.2	0.2	0.2	0.2						0.2	0.2
Lane Grp Cap (vph)		513	436	457	765						2172	678
v/s Ratio Prot		0.10		0.03	c0.16							
v/s Ratio Perm			0.06	0.11							0.44	0.07
v/c Ratio		0.34	0.21	0.31	0.38						0.96	0.15
Uniform Delay, d1		20.8	20.0	13.2	14.2						19.7	11.9
Progression Factor		1.00	1.00	1.16	1.19						1.10	1.34
Incremental Delay, d2		1.8	1.1	1.4	1.1						10.4	0.4
Delay (s)		22.6	21.1	16.7	18.0						32.0	16.3
Level of Service		C	C	B	B						C	B
Approach Delay (s)		21.9			17.6			0.0			31.0	
Approach LOS		C			B			A			C	
Intersection Summary												
HCM 2000 Control Delay			28.1		HCM 2000 Level of Service						C	
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			75.0		Sum of lost time (s)			12.0				
Intersection Capacity Utilization			67.4%		ICU Level of Service						C	
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
130: 7th St & A St

No Build 2040 PM Peak
12/10/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	180	0	0	200	65	205	1485	125	0	0	0
Future Volume (vph)	85	180	0	0	200	65	205	1485	125	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.91				
Frt	1.00	1.00			1.00	0.85		0.99				
Flt Protected	0.95	1.00			1.00	1.00		0.99				
Satd. Flow (prot)	1662	1750			1750	1488		4664				
Flt Permitted	0.62	1.00			1.00	1.00		0.99				
Satd. Flow (perm)	1091	1750			1750	1488		4664				
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)	91	194	0	0	215	70	220	1597	134	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	59	0	9	0	0	0	0
Lane Group Flow (vph)	91	194	0	0	215	11	0	1942	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	custom	NA			NA	Perm	Perm	NA				
Protected Phases		4			8			2				
Permitted Phases	7					8	2					
Actuated Green, G (s)	7.8	23.5			11.7	11.7		43.5				
Effective Green, g (s)	7.8	23.5			11.7	11.7		43.5				
Actuated g/C Ratio	0.10	0.31			0.16	0.16		0.58				
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0				
Vehicle Extension (s)	0.2	0.2			0.2	0.2		0.2				
Lane Grp Cap (vph)	113	548			273	232		2705				
v/s Ratio Prot		0.11			0.12							
v/s Ratio Perm	0.08					0.01		0.42				
v/c Ratio	0.81	0.35			0.79	0.05		0.72				
Uniform Delay, d1	32.9	19.9			30.5	26.9		11.3				
Progression Factor	1.18	1.20			1.00	1.00		1.05				
Incremental Delay, d2	26.5	0.1			12.9	0.0		1.3				
Delay (s)	65.2	24.0			43.4	26.9		13.2				
Level of Service	E	C			D	C		B				
Approach Delay (s)		37.1			39.3			13.2			0.0	
Approach LOS		D			D			B			A	
Intersection Summary												
HCM 2000 Control Delay			18.8				HCM 2000 Level of Service		B			
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			75.0				Sum of lost time (s)		12.0			
Intersection Capacity Utilization			67.4%				ICU Level of Service		C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
140: 6th St & D St

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔↔↔	
Traffic Volume (vph)	0	120	70	110	140	0	0	0	0	100	1905	25
Future Volume (vph)	0	120	70	110	140	0	0	0	0	100	1905	25
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
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)		1663			1712						4757	
Flt Permitted		1.00			0.74						1.00	
Satd. Flow (perm)		1663			1301						4757	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	130	76	120	152	0	0	0	0	109	2071	27
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	201	0	0	272	0	0	0	0	0	2205	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		8			4						6	
Permitted Phases				4						6		
Actuated Green, G (s)		25.0			25.0						42.0	
Effective Green, g (s)		25.0			25.0						42.0	
Actuated g/C Ratio		0.33			0.33						0.56	
Clearance Time (s)		4.0			4.0						4.0	
Vehicle Extension (s)		0.2			0.2						0.2	
Lane Grp Cap (vph)		554			433						2663	
v/s Ratio Prot		0.12										
v/s Ratio Perm					c0.21						0.46	
v/c Ratio		0.36			0.63						0.83	
Uniform Delay, d1		19.0			21.1						13.5	
Progression Factor		1.00			0.73						0.23	
Incremental Delay, d2		1.8			5.6						1.6	
Delay (s)		20.8			21.0						4.6	
Level of Service		C			C						A	
Approach Delay (s)		20.8			21.0			0.0			4.6	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			7.5		HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			75.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			78.9%		ICU Level of Service					D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
150: 7th St & D St

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕↕↕				
Traffic Volume (vph)	35	185	0	0	180	105	80	1700	75	0	0	0
Future Volume (vph)	35	185	0	0	180	105	80	1700	75	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.95			0.99				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1736			1663			4695				
Flt Permitted		0.69			1.00			1.00				
Satd. Flow (perm)		1212			1663			4695				
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)	38	199	0	0	194	113	86	1828	81	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	237	0	0	298	0	0	1990	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8			4			2				
Permitted Phases	8						2					
Actuated Green, G (s)		16.7			16.7			50.3				
Effective Green, g (s)		16.7			16.7			50.3				
Actuated g/C Ratio		0.22			0.22			0.67				
Clearance Time (s)		4.0			4.0			4.0				
Vehicle Extension (s)		0.2			0.2			0.2				
Lane Grp Cap (vph)		269			370			3148				
v/s Ratio Prot					0.18							
v/s Ratio Perm		c0.20						0.42				
v/c Ratio		0.88			0.80			0.63				
Uniform Delay, d1		28.2			27.6			7.1				
Progression Factor		1.00			1.00			0.23				
Incremental Delay, d2		22.5			11.3			0.7				
Delay (s)		50.5			39.0			2.3				
Level of Service		D			D			A				
Approach Delay (s)		50.5			39.0			2.3			0.0	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM 2000 Control Delay			11.3				HCM 2000 Level of Service		B			
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			75.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			79.1%				ICU Level of Service		D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
160: 6th St & E St

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↕						↕	↘
Traffic Volume (vph)	0	0	0	345	405	0	0	0	0	0	2045	140
Future Volume (vph)	0	0	0	345	405	0	0	0	0	0	2045	140
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)				4.0	4.0						4.0	
Lane Util. Factor				0.91	0.91						0.91	
Flt				1.00	1.00						0.99	
Flt Protected				0.95	0.99						1.00	
Satd. Flow (prot)				1513	3154						4732	
Flt Permitted				0.95	0.99						1.00	
Satd. Flow (perm)				1513	3154						4732	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	379	445	0	0	0	0	0	2247	154
RTOR Reduction (vph)	0	0	0	10	10	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	0	0	259	545	0	0	0	0	0	2391	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Perm	NA						NA	
Protected Phases					8						6	
Permitted Phases				8								
Actuated Green, G (s)				25.0	25.0						42.0	
Effective Green, g (s)				25.0	25.0						42.0	
Actuated g/C Ratio				0.33	0.33						0.56	
Clearance Time (s)				4.0	4.0						4.0	
Vehicle Extension (s)				0.2	0.2						0.2	
Lane Grp Cap (vph)				504	1051						2649	
v/s Ratio Prot											c0.51	
v/s Ratio Perm				0.17	0.17							
v/c Ratio				0.51	0.52						0.90	
Uniform Delay, d1				20.1	20.1						14.7	
Progression Factor				0.46	0.49						0.53	
Incremental Delay, d2				2.9	1.4						3.7	
Delay (s)				12.2	11.2						11.4	
Level of Service				B	B						B	
Approach Delay (s)		0.0			11.5			0.0			11.4	
Approach LOS		A			B			A			B	
Intersection Summary												
HCM 2000 Control Delay			11.5		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			75.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			68.3%		ICU Level of Service					C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
170: 7th St & E St













No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑		↑	↑↑↑					
Traffic Volume (vph)	0	0	0	0	585	260	180	1570	0	0	0	0	
Future Volume (vph)	0	0	0	0	585	260	180	1570	0	0	0	0	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Total Lost time (s)					4.0		4.0	4.0					
Lane Util. Factor					0.95		0.86	0.86					
Fr _t					0.95		1.00	1.00					
Fl _t Protected					1.00		0.95	1.00					
Satd. Flow (prot)					3152		1430	4468					
Fl _t Permitted					1.00		0.95	1.00					
Satd. Flow (perm)					3152		1430	4468					
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	636	283	196	1707	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	7	0	54	7	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	912	0	122	1721	0	0	0	0	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	1%	0%	0%	0%	0%	
Turn Type					NA		Perm	NA					
Protected Phases					8			2					
Permitted Phases							2						
Actuated Green, G (s)					24.5		42.5	42.5					
Effective Green, g (s)					24.5		42.5	42.5					
Actuated g/C Ratio					0.33		0.57	0.57					
Clearance Time (s)					4.0		4.0	4.0					
Vehicle Extension (s)					0.2		0.2	0.2					
Lane Grp Cap (vph)					1029		810	2531					
v/s Ratio Prot					0.29								
v/s Ratio Perm							0.09	0.39					
v/c Ratio					0.89		0.15	0.68					
Uniform Delay, d ₁					23.9		7.7	11.5					
Progression Factor					1.00		0.64	0.87					
Incremental Delay, d ₂					9.1		0.3	1.1					
Delay (s)					33.0		5.2	11.1					
Level of Service					C		A	B					
Approach Delay (s)		0.0			33.0			10.5			0.0		
Approach LOS		A			C			B			A		
Intersection Summary													
HCM 2000 Control Delay			17.9		HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio			0.75										
Actuated Cycle Length (s)			75.0		Sum of lost time (s)				8.0				
Intersection Capacity Utilization			68.3%		ICU Level of Service				C				
Analysis Period (min)			15										
c Critical Lane Group													













HCM Signalized Intersection Capacity Analysis
180: 6th St & F St

No Build 2040 PM Peak
12/10/2018

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑								↖	↑↑↑		
Traffic Volume (vph)	0	295	135	0	0	0	0	0	0	210	2160	0	
Future Volume (vph)	0	295	135	0	0	0	0	0	0	210	2160	0	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Total Lost time (s)		4.0								4.0	4.0		
Lane Util. Factor		0.95								1.00	0.91		
Frt		0.95								1.00	1.00		
Flt Protected		1.00								0.95	1.00		
Satd. Flow (prot)		3168								1646	4778		
Flt Permitted		1.00								0.95	1.00		
Satd. Flow (perm)		3168								1646	4778		
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	317	145	0	0	0	0	0	0	226	2323	0	
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	103	0	0	
Lane Group Flow (vph)	0	460	0	0	0	0	0	0	0	123	2323	0	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	
Turn Type		NA								Perm	NA		
Protected Phases		4									6		
Permitted Phases										6			
Actuated Green, G (s)		26.1								40.9	40.9		
Effective Green, g (s)		26.1								40.9	40.9		
Actuated g/C Ratio		0.35								0.55	0.55		
Clearance Time (s)		4.0								4.0	4.0		
Vehicle Extension (s)		0.2								0.2	0.2		
Lane Grp Cap (vph)		1102								897	2605		
v/s Ratio Prot		c0.15									c0.49		
v/s Ratio Perm										0.07			
v/c Ratio		0.42								0.14	0.89		
Uniform Delay, d1		18.7								8.4	15.1		
Progression Factor		1.00								0.07	0.58		
Incremental Delay, d2		1.2								0.2	2.7		
Delay (s)		19.8								0.7	11.5		
Level of Service		B								A	B		
Approach Delay (s)		19.8			0.0			0.0			10.6		
Approach LOS		B			A			A			B		
Intersection Summary													
HCM 2000 Control Delay			12.0		HCM 2000 Level of Service						B		
HCM 2000 Volume to Capacity ratio			0.71										
Actuated Cycle Length (s)			75.0		Sum of lost time (s)					8.0			
Intersection Capacity Utilization			68.3%		ICU Level of Service					C			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
190: 7th St & F St

No Build 2040 PM Peak
12/10/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔						↔↔↔				
Traffic Volume (vph)	115	420	0	0	0	0	0	1640	185	0	0	0
Future Volume (vph)	115	420	0	0	0	0	0	1640	185	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		0.95						0.91				
Frt		1.00						0.98				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		3264						4705				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		3264						4705				
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)	128	467	0	0	0	0	0	1822	206	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	14	0	0	0	0
Lane Group Flow (vph)	0	583	0	0	0	0	0	2014	0	0	0	0
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA						NA				
Protected Phases		4						6				
Permitted Phases	4											
Actuated Green, G (s)		17.1						49.9				
Effective Green, g (s)		17.1						49.9				
Actuated g/C Ratio		0.23						0.67				
Clearance Time (s)		4.0						4.0				
Vehicle Extension (s)		0.2						0.2				
Lane Grp Cap (vph)		744						3130				
v/s Ratio Prot								c0.43				
v/s Ratio Perm		0.18										
v/c Ratio		0.78						0.64				
Uniform Delay, d1		27.2						7.3				
Progression Factor		0.88						0.52				
Incremental Delay, d2		4.9						0.9				
Delay (s)		28.8						4.7				
Level of Service		C						A				
Approach Delay (s)		28.8			0.0			4.7			0.0	
Approach LOS		C			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.2					HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			75.0					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
200: 6th St & G St

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔					↔	↑↑↑	↔
Traffic Volume (vph)	0	185	135	55	225	0	0	0	0	100	2060	160
Future Volume (vph)	0	185	135	55	225	0	0	0	0	100	2060	160
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0					4.0	4.0	4.0
Lane Util. Factor		1.00			1.00					1.00	0.91	1.00
Frt		0.94			1.00					1.00	1.00	0.85
Flt Protected		1.00			0.99					0.95	1.00	1.00
Satd. Flow (prot)		1650			1733					1662	4778	1488
Flt Permitted		1.00			0.86					0.95	1.00	1.00
Satd. Flow (perm)		1650			1504					1662	4778	1488
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	195	142	58	237	0	0	0	0	105	2168	168
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	0	0	0	79
Lane Group Flow (vph)	0	334	0	0	295	0	0	0	0	105	2168	89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type		NA		Perm	NA					Perm	NA	Perm
Protected Phases		8			4						6	
Permitted Phases				4						6		6
Actuated Green, G (s)		27.3			27.3					39.7	39.7	39.7
Effective Green, g (s)		27.3			27.3					39.7	39.7	39.7
Actuated g/C Ratio		0.36			0.36					0.53	0.53	0.53
Clearance Time (s)		4.0			4.0					4.0	4.0	4.0
Vehicle Extension (s)		0.2			0.2					0.2	0.2	0.2
Lane Grp Cap (vph)		600			547					879	2529	787
v/s Ratio Prot		c0.20									c0.45	
v/s Ratio Perm					0.20					0.06		0.06
v/c Ratio		0.56			0.54					0.12	0.86	0.11
Uniform Delay, d1		19.0			18.9					8.9	15.2	8.8
Progression Factor		1.00			1.31					0.20	0.30	0.05
Incremental Delay, d2		3.7			3.8					0.1	2.1	0.1
Delay (s)		22.7			28.6					1.9	6.7	0.6
Level of Service		C			C					A	A	A
Approach Delay (s)		22.7			28.6			0.0			6.1	
Approach LOS		C			C			A			A	

Intersection Summary		
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.73	B
Actuated Cycle Length (s)	75.0	Sum of lost time (s)
Intersection Capacity Utilization	88.9%	8.0
Analysis Period (min)	15	ICU Level of Service
		E
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
210: 7th St & G St

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑			↑	↗	↘	↑↑↑				
Traffic Volume (vph)	115	170	0	0	120	90	160	1580	50	0	0	0
Future Volume (vph)	115	170	0	0	120	90	160	1580	50	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0				
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.91				
Frt	1.00	1.00			1.00	0.85	1.00	1.00				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	1662	1750			1750	1488	1662	4755				
Flt Permitted	0.65	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	1129	1750			1750	1488	1662	4755				
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)	124	183	0	0	129	97	172	1699	54	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	13	0	3	0	0	0	0
Lane Group Flow (vph)	124	183	0	0	129	84	172	1750	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA			NA	Perm	Perm	NA				
Protected Phases		8			4			2				
Permitted Phases	8					4	2					
Actuated Green, G (s)	14.9	14.9			14.9	14.9	52.1	52.1				
Effective Green, g (s)	14.9	14.9			14.9	14.9	52.1	52.1				
Actuated g/C Ratio	0.20	0.20			0.20	0.20	0.69	0.69				
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0				
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0				
Lane Grp Cap (vph)	224	347			347	295	1154	3303				
v/s Ratio Prot		0.10			0.07			c0.37				
v/s Ratio Perm	c0.11					0.06	0.10					
v/c Ratio	0.55	0.53			0.37	0.29	0.15	0.53				
Uniform Delay, d1	27.1	26.9			26.0	25.5	3.9	5.5				
Progression Factor	0.76	0.79			1.00	1.00	0.35	0.33				
Incremental Delay, d2	2.8	1.4			0.7	0.5	0.2	0.5				
Delay (s)	23.2	22.6			26.7	26.1	1.6	2.4				
Level of Service	C	C			C	C	A	A				
Approach Delay (s)		22.9			26.4			2.3			0.0	
Approach LOS		C			C			A			A	

Intersection Summary

HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
220: 6th St & J St

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↕↕↕	
Traffic Volume (vph)	0	30	50	45	45	0	0	0	0	30	2240	45
Future Volume (vph)	0	30	50	45	45	0	0	0	0	30	2240	45
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frt		0.92			1.00						1.00	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1602			1707						4761	
Flt Permitted		1.00			0.85						1.00	
Satd. Flow (perm)		1602			1487						4761	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	33	55	49	49	0	0	0	0	33	2462	49
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	87	0	0	98	0	0	0	0	0	2541	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		8			4						6	
Permitted Phases				4						6		
Actuated Green, G (s)		25.3			25.3						41.7	
Effective Green, g (s)		25.3			25.3						41.7	
Actuated g/C Ratio		0.34			0.34						0.56	
Clearance Time (s)		4.0			4.0						4.0	
Vehicle Extension (s)		0.2			0.2						0.2	
Lane Grp Cap (vph)		540			501						2647	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.07						0.53	
v/c Ratio		0.16			0.20						0.96	
Uniform Delay, d1		17.4			17.6						15.9	
Progression Factor		1.00			0.81						0.61	
Incremental Delay, d2		0.6			0.9						7.6	
Delay (s)		18.0			15.1						17.3	
Level of Service		B			B						B	
Approach Delay (s)		18.0			15.1			0.0			17.3	
Approach LOS		B			B			A			B	
Intersection Summary												
HCM 2000 Control Delay			17.3			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			67.3%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
230: 7th St & J St

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖			↗			↖↗↘				
Traffic Volume (vph)	30	20	0	0	60	20	25	1755	10	0	0	0
Future Volume (vph)	30	20	0	0	60	20	25	1755	10	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.91				
Frt		1.00			0.97			1.00				
Flt Protected		0.97			1.00			1.00				
Satd. Flow (prot)		1699			1691			4770				
Flt Permitted		0.78			1.00			1.00				
Satd. Flow (perm)		1361			1691			4770				
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	33	22	0	0	66	22	27	1929	11	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	55	0	0	79	0	0	1967	0	0	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8			4			2				
Permitted Phases	8						2					
Actuated Green, G (s)		8.8			8.8			58.2				
Effective Green, g (s)		8.8			8.8			58.2				
Actuated g/C Ratio		0.12			0.12			0.78				
Clearance Time (s)		4.0			4.0			4.0				
Vehicle Extension (s)		0.2			0.2			0.2				
Lane Grp Cap (vph)		159			198			3701				
v/s Ratio Prot					c0.05							
v/s Ratio Perm		0.04						0.41				
v/c Ratio		0.35			0.40			0.53				
Uniform Delay, d1		30.5			30.7			3.2				
Progression Factor		0.82			1.00			0.53				
Incremental Delay, d2		0.4			0.5			0.4				
Delay (s)		25.4			31.1			2.1				
Level of Service		C			C			A				
Approach Delay (s)		25.4			31.1			2.1			0.0	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			3.9				HCM 2000 Level of Service		A			
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			75.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			53.9%				ICU Level of Service		A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
240: 6th St & M St

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↘	↑						↑↑↑	↗
Traffic Volume (vph)	0	180	470	220	670	0	0	0	0	125	2250	160
Future Volume (vph)	0	180	470	220	670	0	0	0	0	125	2250	160
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0						4.0	4.0
Lane Util. Factor		1.00	1.00	1.00	1.00						0.91	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)		1733	1488	1662	1750						4765	1488
Flt Permitted		1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)		1733	1488	1662	1750						4765	1488
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	189	495	232	705	0	0	0	0	132	2368	168
RTOR Reduction (vph)	0	0	56	0	0	0	0	0	0	0	0	59
Lane Group Flow (vph)	0	189	439	232	705	0	0	0	0	0	2500	109
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type		NA	Prot	Prot	NA					Perm	NA	Perm
Protected Phases		4	4	3	8						6	
Permitted Phases										6		6
Actuated Green, G (s)		17.0	17.0	10.0	31.0						36.0	36.0
Effective Green, g (s)		17.0	17.0	10.0	31.0						36.0	36.0
Actuated g/C Ratio		0.23	0.23	0.13	0.41						0.48	0.48
Clearance Time (s)		4.0	4.0	4.0	4.0						4.0	4.0
Vehicle Extension (s)		0.2	0.2	2.5	0.2						0.2	0.2
Lane Grp Cap (vph)		392	337	221	723						2287	714
v/s Ratio Prot		0.11	c0.29	0.14	c0.40							
v/s Ratio Perm											0.52	0.07
v/c Ratio		0.48	1.30	1.05	0.98						1.09	0.15
Uniform Delay, d1		25.2	29.0	32.5	21.6						19.5	10.9
Progression Factor		1.00	1.00	1.08	1.13						0.70	0.47
Incremental Delay, d2		0.3	155.7	61.5	20.4						45.6	0.2
Delay (s)		25.5	184.7	96.6	44.8						59.3	5.3
Level of Service		C	F	F	D						E	A
Approach Delay (s)		140.7			57.6			0.0			55.9	
Approach LOS		F			E			A			E	
Intersection Summary												
HCM 2000 Control Delay			69.8			HCM 2000 Level of Service					E	
HCM 2000 Volume to Capacity ratio			1.17									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			104.8%			ICU Level of Service					G	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
250: 7th St & M St

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↑	↗		↖↖↖	↗				
Traffic Volume (vph)	5	285	0	0	425	145	470	1580	135	0	0	0	
Future Volume (vph)	5	285	0	0	425	145	470	1580	135	0	0	0	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0				
Lane Util. Factor		1.00			1.00	1.00		0.91	1.00				
Frt		1.00			1.00	0.85		1.00	0.85				
Flt Protected		1.00			1.00	1.00		0.99	1.00				
Satd. Flow (prot)		1732			1750	1488		4723	1488				
Flt Permitted		0.98			1.00	1.00		0.99	1.00				
Satd. Flow (perm)		1697			1750	1488		4723	1488				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	5	310	0	0	462	158	511	1717	147	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	11	0	0	59	0	0	0	
Lane Group Flow (vph)	0	315	0	0	462	147	0	2228	88	0	0	0	
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm				
Protected Phases		8			4			2					
Permitted Phases	8					4	2		2				
Actuated Green, G (s)		22.1			22.1	22.1		44.9	44.9				
Effective Green, g (s)		22.1			22.1	22.1		44.9	44.9				
Actuated g/C Ratio		0.29			0.29	0.29		0.60	0.60				
Clearance Time (s)		4.0			4.0	4.0		4.0	4.0				
Vehicle Extension (s)		0.2			0.2	0.2		0.2	0.2				
Lane Grp Cap (vph)		500			515	438		2827	890				
v/s Ratio Prot					c0.26								
v/s Ratio Perm		0.19				0.10		0.47	0.06				
v/c Ratio		0.63			0.90	0.34		0.79	0.10				
Uniform Delay, d1		22.9			25.4	20.7		11.4	6.4				
Progression Factor		1.02			1.00	1.00		1.00	1.00				
Incremental Delay, d2		1.3			17.7	0.2		2.3	0.2				
Delay (s)		24.6			43.0	20.9		13.7	6.6				
Level of Service		C			D	C		B	A				
Approach Delay (s)		24.6			37.4			13.3			0.0		
Approach LOS		C			D			B			A		
Intersection Summary													
HCM 2000 Control Delay			18.9		HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio			0.82										
Actuated Cycle Length (s)			75.0		Sum of lost time (s)				8.0				
Intersection Capacity Utilization			79.8%		ICU Level of Service				D				
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 260: 6th St & OR 99 EB & Park St

No Build 2040 PM Peak
 12/10/2018



Movement	EBT	EBR	EBR2	WBL2	WBL	WBT	SBL2	SBL	SBT	SBR
Lane Configurations	↑	↔				↕		↔	↕	
Traffic Volume (vph)	231	45	34	10	63	37	118	415	1828	179
Future Volume (vph)	231	45	34	10	63	37	118	415	1828	179
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	5.0				5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00				1.00		0.86	0.86	
Frt	1.00	0.85				1.00		1.00	0.99	
Flt Protected	1.00	1.00				0.97		0.95	1.00	
Satd. Flow (prot)	1733	1488				1677		1408	4450	
Flt Permitted	1.00	1.00				0.97		0.95	1.00	
Satd. Flow (perm)	1733	1488				1677		1408	4450	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	243	47	36	11	66	39	124	437	1924	188
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	8	0
Lane Group Flow (vph)	243	83	0	0	0	116	0	517	2148	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	3%	0%	2%	0%	0%
Turn Type	NA	Prot		Perm	Split	NA	Split	Split	NA	
Protected Phases	8	8			7	7	5	5	5	
Permitted Phases				7						
Actuated Green, G (s)	16.9	16.9				12.0		60.8	60.8	
Effective Green, g (s)	16.9	16.9				12.0		60.8	60.8	
Actuated g/C Ratio	0.16	0.16				0.11		0.58	0.58	
Clearance Time (s)	5.0	5.0				5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0				2.0		3.0	3.0	
Lane Grp Cap (vph)	279	240				192		817	2584	
v/s Ratio Prot	c0.14	0.06				c0.07		0.37	c0.48	
v/s Ratio Perm										
v/c Ratio	0.87	0.35				0.60		0.63	0.83	
Uniform Delay, d1	42.8	39.0				44.1		14.6	17.8	
Progression Factor	1.00	1.00				1.00		1.00	1.00	
Incremental Delay, d2	23.7	0.3				3.6		1.6	2.4	
Delay (s)	66.5	39.3				47.7		16.2	20.2	
Level of Service	E	D				D		B	C	
Approach Delay (s)	59.6					47.7			19.4	
Approach LOS	E					D			B	
Intersection Summary										
HCM 2000 Control Delay			24.7			HCM 2000 Level of Service			C	
HCM 2000 Volume to Capacity ratio			0.81							
Actuated Cycle Length (s)			104.7			Sum of lost time (s)			15.0	
Intersection Capacity Utilization			73.2%			ICU Level of Service			D	
Analysis Period (min)			15							
c Critical Lane Group										

HCM Signalized Intersection Capacity Analysis
 270: 7th St & OR 99 WB & Park St

No Build 2040 PM Peak
 12/10/2018



Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NWL	NWR	NWR2
Lane Configurations										
Traffic Volume (vph)	245	140	80	120	70	1500	30	25	300	10
Future Volume (vph)	245	140	80	120	70	1500	30	25	300	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00		0.95		1.00	0.95	
Frt	1.00	1.00	1.00	0.85		1.00		0.87	0.85	
Flt Protected	0.95	1.00	1.00	1.00		1.00		0.99	1.00	
Satd. Flow (prot)	1662	1750	1750	1488		3308		1516	1413	
Flt Permitted	0.68	1.00	1.00	1.00		1.00		0.99	1.00	
Satd. Flow (perm)	1182	1750	1750	1488		3308		1516	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
Adj. Flow (vph)	261	149	85	128	74	1596	32	27	319	11
RTOR Reduction (vph)	0	0	0	36	0	0	0	0	0	0
Lane Group Flow (vph)	261	149	85	92	0	1702	0	180	177	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	NA	Perm	Split	NA		Prot	Prot	
Protected Phases		4	8		6	6		5	5	
Permitted Phases	4			8						
Actuated Green, G (s)	31.1	31.1	31.1	31.1		71.5		19.8	19.8	
Effective Green, g (s)	31.1	31.1	31.1	31.1		72.0		20.3	20.3	
Actuated g/C Ratio	0.23	0.23	0.23	0.23		0.53		0.15	0.15	
Clearance Time (s)	4.0	4.0	4.0	4.0		4.5		4.5	4.5	
Vehicle Extension (s)	2.5	2.5	2.5	2.5		4.2		4.2	4.2	
Lane Grp Cap (vph)	271	401	401	341		1759		227	211	
v/s Ratio Prot		0.09	0.05			c0.51		0.12	c0.13	
v/s Ratio Perm	c0.22			0.06						
v/c Ratio	0.96	0.37	0.21	0.27		0.97		0.79	0.84	
Uniform Delay, d1	51.6	43.9	42.2	42.8		30.6		55.5	56.0	
Progression Factor	1.00	1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	44.3	0.4	0.2	0.3		14.5		18.3	25.5	
Delay (s)	95.8	44.3	42.4	43.1		45.1		73.8	81.4	
Level of Service	F	D	D	D		D		E	F	
Approach Delay (s)		77.1	42.8			45.1		77.6		
Approach LOS		E	D			D		E		

Intersection Summary			
HCM 2000 Control Delay	54.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	135.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
280: Parkdale Dr & OR 99

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	255	35	175	270	70	30	415	130	80	510	95
Future Volume (vph)	85	255	35	175	270	70	30	415	130	80	510	95
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1750	1488	1662	1750	1488	1662	1687		1630	1709	
Flt Permitted	0.53	1.00	1.00	0.55	1.00	1.00	0.26	1.00		0.31	1.00	
Satd. Flow (perm)	929	1750	1488	965	1750	1488	454	1687		535	1709	
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)	88	263	36	180	278	72	31	428	134	82	526	98
RTOR Reduction (vph)	0	0	23	0	0	47	0	16	0	0	9	0
Lane Group Flow (vph)	88	263	13	180	278	25	31	546	0	82	615	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			8				4
Permitted Phases	6		6	2		2	8			4		
Actuated Green, G (s)	15.9	15.9	15.9	15.9	15.9	15.9	22.2	22.2		22.2	22.2	
Effective Green, g (s)	16.4	16.4	16.4	16.4	16.4	16.4	22.7	22.7		22.7	22.7	
Actuated g/C Ratio	0.35	0.35	0.35	0.35	0.35	0.35	0.48	0.48		0.48	0.48	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	323	609	518	336	609	518	218	813		257	823	
v/s Ratio Prot		0.15			0.16			0.32				c0.36
v/s Ratio Perm	0.09		0.01	c0.19		0.02	0.07			0.15		
v/c Ratio	0.27	0.43	0.02	0.54	0.46	0.05	0.14	0.67		0.32	0.75	
Uniform Delay, d1	11.1	11.8	10.1	12.3	11.9	10.2	6.8	9.3		7.5	9.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.5	0.0	1.6	0.5	0.0	0.2	2.0		0.5	3.5	
Delay (s)	11.5	12.3	10.1	13.9	12.4	10.2	7.0	11.3		8.0	13.4	
Level of Service	B	B	B	B	B	B	A	B		A	B	
Approach Delay (s)		11.9			12.6			11.1			12.8	
Approach LOS		B			B			B			B	

Intersection Summary

HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	47.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	600	60	5	510	40	5
Future Vol, veh/h	600	60	5	510	40	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	682	68	6	580	45	6

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	750	0	1308
Stage 1	-	-	-	-	716
Stage 2	-	-	-	-	592
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	868	-	178
Stage 1	-	-	-	-	488
Stage 2	-	-	-	-	557
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	868	-	177
Mov Cap-2 Maneuver	-	-	-	-	316
Stage 1	-	-	-	-	485
Stage 2	-	-	-	-	557

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	18.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	326	-	-	868	-
HCM Lane V/C Ratio	0.157	-	-	0.007	-
HCM Control Delay (s)	18.1	-	-	9.2	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑		↑
Traffic Vol, veh/h	590	5	5	870	0	35
Future Vol, veh/h	590	5	5	870	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	275	275	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	608	5	5	897	0	36

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	613	0	- 304
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	4.1	-	- 6.9
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	2.2	-	- 3.3
Pot Cap-1 Maneuver	-	-	976	-	0 698
Stage 1	-	-	-	-	0 -
Stage 2	-	-	-	-	0 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	976	-	- 698
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	698	-	-	976	-
HCM Lane V/C Ratio	0.052	-	-	0.005	-
HCM Control Delay (s)	10.4	-	-	8.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

HCM Signalized Intersection Capacity Analysis
310: Hubbard Ln & US 199

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	545	5	15	760	135	5	10	10	140	20	35
Future Volume (vph)	10	545	5	15	760	135	5	10	10	140	20	35
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3228	1488	1583	3292	1488	1250	1619		1568	1584	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.72	1.00		0.74	1.00	
Satd. Flow (perm)	1662	3228	1488	1583	3292	1488	947	1619		1229	1584	
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)	10	568	5	16	792	141	5	10	10	146	21	36
RTOR Reduction (vph)	0	0	3	0	0	79	0	7	0	0	25	0
Lane Group Flow (vph)	10	568	2	16	792	62	5	13	0	146	32	0
Heavy Vehicles (%)	0%	3%	0%	5%	1%	0%	33%	0%	0%	6%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			8				4
Permitted Phases			6			2	8			4		
Actuated Green, G (s)	0.5	20.0	20.0	0.5	20.0	20.0	14.6	14.6		14.6	14.6	
Effective Green, g (s)	0.5	22.0	22.0	0.5	22.0	22.0	15.6	15.6		15.6	15.6	
Actuated g/C Ratio	0.01	0.44	0.44	0.01	0.44	0.44	0.31	0.31		0.31	0.31	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	16	1417	653	15	1445	653	294	504		382	493	
v/s Ratio Prot	0.01	0.18		c0.01	c0.24			0.01				0.02
v/s Ratio Perm			0.00			0.04	0.01			c0.12		
v/c Ratio	0.62	0.40	0.00	1.07	0.55	0.09	0.02	0.03		0.38	0.07	
Uniform Delay, d1	24.7	9.6	7.9	24.8	10.4	8.2	11.9	12.0		13.5	12.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	57.6	0.2	0.0	255.5	0.4	0.1	0.0	0.0		0.6	0.1	
Delay (s)	82.3	9.8	7.9	280.3	10.8	8.3	12.0	12.0		14.1	12.2	
Level of Service	F	A	A	F	B	A	B	B		B	B	
Approach Delay (s)		11.0			15.0			12.0			13.6	
Approach LOS		B			B			B			B	

Intersection Summary

HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	50.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑	↑						↑
Traffic Vol, veh/h	0	680	15	290	925	265	0	0	0	0	0	20
Future Vol, veh/h	0	680	15	290	925	265	0	0	0	0	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	315	200	-	275	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	0	739	16	315	1005	288	0	0	0	0	0	22

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	755	0	0	-	-	503
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.1	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.2	-	-	-	-	3.3
Pot Cap-1 Maneuver	0	-	-	865	-	-	0	0	519
Stage 1	0	-	-	-	-	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	865	-	-	-	0	519
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.3	12.2
HCM LOS			B

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	865	-	-	519
HCM Lane V/C Ratio	-	-	0.364	-	-	0.042
HCM Control Delay (s)	-	-	11.5	-	-	12.2
HCM Lane LOS	-	-	B	-	-	B
HCM 95th %tile Q(veh)	-	-	1.7	-	-	0.1

HCM Signalized Intersection Capacity Analysis
330: Dowell Rd & US 199

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	765	25	275	1265	200	80	70	285	145	90	75
Future Volume (vph)	40	765	25	275	1265	200	80	70	285	145	90	75
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3260	1403	1662	3260	1488	1662	1539		1646	1631	
Flt Permitted	0.11	1.00	1.00	0.28	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	200	3260	1403	496	3260	1488	1662	1539		1646	1631	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	44	841	27	302	1390	220	88	77	313	159	99	82
RTOR Reduction (vph)	0	0	11	0	0	91	0	126	0	0	34	0
Lane Group Flow (vph)	44	841	16	302	1390	129	88	264	0	159	147	0
Heavy Vehicles (%)	0%	2%	6%	0%	2%	0%	0%	0%	0%	1%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4		4						
Actuated Green, G (s)	52.0	52.0	52.0	52.0	52.0	52.0	6.0	16.9		8.0	18.9	
Effective Green, g (s)	52.0	52.0	52.0	52.0	52.0	52.0	6.0	16.9		8.0	18.9	
Actuated g/C Ratio	0.58	0.58	0.58	0.58	0.58	0.58	0.07	0.19		0.09	0.21	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	116	1906	820	290	1906	870	112	292		148	346	
v/s Ratio Prot		0.26			0.43		0.05	c0.17		c0.10	0.09	
v/s Ratio Perm	0.22		0.01	c0.61		0.09						
v/c Ratio	0.38	0.44	0.02	1.04	0.73	0.15	0.79	0.91		1.07	0.43	
Uniform Delay, d1	9.8	10.3	7.7	18.5	13.4	8.4	40.8	35.2		40.5	30.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.1	0.0	64.0	1.3	0.1	28.6	29.4		95.2	0.6	
Delay (s)	11.4	10.4	7.8	82.5	14.7	8.4	69.4	64.6		135.7	30.9	
Level of Service	B	B	A	F	B	A	E	E		F	C	
Approach Delay (s)		10.4			24.7			65.5			79.9	
Approach LOS		B			C			E			E	
Intersection Summary												
HCM 2000 Control Delay			31.6				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			88.9				Sum of lost time (s)				12.0	
Intersection Capacity Utilization			86.4%				ICU Level of Service				E	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
340: Allen Creek Rd & US 199

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↗	↙	↑↑	↗	↙↗	↑		↙	↗	
Traffic Volume (vph)	10	970	220	295	1330	10	430	20	170	5	115	15
Future Volume (vph)	10	970	220	295	1330	10	430	20	170	5	115	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3292	1430	1662	3292	1488	3225	1516		1662	1720	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	3292	1430	1662	3292	1488	3225	1516		1662	1720	
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	1043	237	317	1430	11	462	22	183	5	124	16
RTOR Reduction (vph)	0	0	168	0	0	5	0	134	0	0	4	0
Lane Group Flow (vph)	11	1043	69	317	1430	6	462	71	0	5	136	0
Heavy Vehicles (%)	0%	1%	4%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			6			2						
Actuated Green, G (s)	1.5	32.8	32.8	33.9	65.2	65.2	14.0	31.3		1.0	18.3	
Effective Green, g (s)	2.5	34.8	34.8	34.9	67.2	67.2	15.0	32.3		2.0	19.3	
Actuated g/C Ratio	0.02	0.29	0.29	0.29	0.56	0.56	0.12	0.27		0.02	0.16	
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.5	4.7	4.7	2.5	4.7	4.7	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	34	954	414	483	1843	833	403	408		27	276	
v/s Ratio Prot	0.01	c0.32		c0.19	c0.43		c0.14	0.05		0.00	c0.08	
v/s Ratio Perm			0.05			0.00						
v/c Ratio	0.32	1.09	0.17	0.66	0.78	0.01	1.15	0.17		0.19	0.49	
Uniform Delay, d1	57.9	42.6	31.8	37.3	20.5	11.7	52.5	33.6		58.2	45.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.0	58.0	0.9	2.9	3.3	0.0	91.2	0.1		2.4	1.0	
Delay (s)	61.9	100.6	32.6	40.2	23.8	11.7	143.7	33.8		60.6	46.9	
Level of Service	E	F	C	D	C	B	F	C		E	D	
Approach Delay (s)		87.8			26.7			109.9			47.4	
Approach LOS		F			C			F			D	

Intersection Summary

HCM 2000 Control Delay	62.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑				↑			↑
Traffic Vol, veh/h	0	1585	175	0	2560	25	0	0	150	0	0	20
Future Vol, veh/h	0	1585	175	0	2560	25	0	0	150	0	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	275	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1634	180	0	2639	26	0	0	155	0	0	21

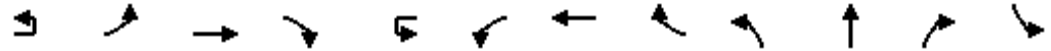
Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	-	0	0	-	-	0	-	-	817	-	-	1333
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	320	0	0	144
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	320	-	-	144
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	26.3	34.1
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	320	-	-	-	-	144
HCM Lane V/C Ratio	0.483	-	-	-	-	0.143
HCM Control Delay (s)	26.3	-	-	-	-	34.1
HCM Lane LOS	D	-	-	-	-	D
HCM 95th %tile Q(veh)	2.5	-	-	-	-	0.5

HCM Signalized Intersection Capacity Analysis
360: Ringuette St & US 199

No Build 2040 PM Peak
12/10/2018



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations		↔	↕	↗		↔	↕	↗	↖	↕	↗	↖
Traffic Volume (vph)	45	85	1475	60	15	190	2090	20	280	65	215	15
Future Volume (vph)	45	85	1475	60	15	190	2090	20	280	65	215	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	0.95	1.00		1.00	0.95		0.95	0.95	1.00	1.00
Frt		1.00	1.00	0.85		1.00	1.00		1.00	1.00	0.85	1.00
Flt Protected		0.95	1.00	1.00		0.95	1.00		0.95	0.97	1.00	0.95
Satd. Flow (prot)		1662	3260	1458		1662	3288		1579	1612	1473	1662
Flt Permitted		0.06	1.00	1.00		0.06	1.00		0.95	0.97	1.00	0.95
Satd. Flow (perm)		112	3260	1458		105	3288		1579	1612	1473	1662
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)	46	88	1521	62	15	196	2155	21	289	67	222	15
RTOR Reduction (vph)	0	0	0	31	0	0	0	0	0	0	193	0
Lane Group Flow (vph)	0	134	1521	31	0	211	2176	0	176	180	29	15
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	1%	0%	0%	0%	1%	0%
Turn Type	Prot	pm+pt	NA	Perm	Prot	pm+pt	NA		Split	NA	Perm	Split
Protected Phases	1	1	6		5	5	2		8	8		4
Permitted Phases		6		6		2					8	
Actuated Green, G (s)		69.1	61.4	61.4		79.4	66.7		15.8	15.8	15.8	15.8
Effective Green, g (s)		71.1	62.4	62.4		80.4	67.7		16.3	16.3	16.3	16.3
Actuated g/C Ratio		0.57	0.50	0.50		0.64	0.54		0.13	0.13	0.13	0.13
Clearance Time (s)		5.0	5.0	5.0		5.0	5.0		4.5	4.5	4.5	4.5
Vehicle Extension (s)		2.5	4.5	4.5		2.5	4.5		2.5	2.5	2.5	2.8
Lane Grp Cap (vph)		171	1627	727		241	1780		205	210	192	216
v/s Ratio Prot		0.05	0.47			c0.10	c0.66		0.11	c0.11		0.01
v/s Ratio Perm		0.39		0.02		0.46					0.02	
v/c Ratio		0.78	0.93	0.04		0.88	1.22		0.86	0.86	0.15	0.07
Uniform Delay, d1		32.2	29.4	16.0		38.8	28.6		53.2	53.2	48.2	47.7
Progression Factor		1.00	1.00	1.00		1.38	0.74		1.00	1.00	1.00	1.00
Incremental Delay, d2		19.9	11.4	0.1		18.6	103.2		27.8	27.1	0.3	0.1
Delay (s)		52.1	40.8	16.1		72.1	124.5		81.0	80.3	48.5	47.8
Level of Service		D	D	B		E	F		F	F	D	D
Approach Delay (s)			40.8				119.8			68.3		
Approach LOS			D				F			E		

Intersection Summary			
HCM 2000 Control Delay	83.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	107.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBT	SBR
Lane Configurations	↶	
Traffic Volume (vph)	65	135
Future Volume (vph)	65	135
Ideal Flow (vphpl)	1750	1750
Total Lost time (s)	4.0	
Lane Util. Factor	1.00	
Frt	0.90	
Flt Protected	1.00	
Satd. Flow (prot)	1573	
Flt Permitted	1.00	
Satd. Flow (perm)	1573	
Peak-hour factor, PHF	0.97	0.97
Adj. Flow (vph)	67	139
RTOR Reduction (vph)	45	0
Lane Group Flow (vph)	161	0
Heavy Vehicles (%)	0%	0%
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Actuated Green, G (s)	15.8	
Effective Green, g (s)	16.3	
Actuated g/C Ratio	0.13	
Clearance Time (s)	4.5	
Vehicle Extension (s)	2.8	
Lane Grp Cap (vph)	205	
v/s Ratio Prot	c0.10	
v/s Ratio Perm		
v/c Ratio	0.78	
Uniform Delay, d1	52.6	
Progression Factor	1.00	
Incremental Delay, d2	17.4	
Delay (s)	70.0	
Level of Service	E	
Approach Delay (s)	68.5	
Approach LOS	E	
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
380: OR 238/6th St & US 199

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	840	25	570	1165	5	115	15	395	5	1095	1115
Future Volume (vph)	10	840	25	570	1165	5	115	15	395	5	1095	1115
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		0.97	0.95		1.00	1.00			0.95	1.00
Frt	1.00	1.00		1.00	1.00		1.00	0.86			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1471	3124		3162	3227		1614	1455			3291	1473
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (perm)	1471	3124		3162	3227		1614	1455			3138	1473
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	10	857	26	582	1189	5	117	15	403	5	1117	1138
RTOR Reduction (vph)	0	1	0	0	0	0	0	210	0	0	0	0
Lane Group Flow (vph)	10	882	0	582	1194	0	117	208	0	0	1122	1138
Heavy Vehicles (%)	13%	6%	5%	2%	3%	0%	3%	0%	3%	0%	1%	1%
Turn Type	Prot	NA		Prot	NA		Prot	NA		Perm	NA	Free
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases										4		Free
Actuated Green, G (s)	1.0	33.0		22.0	54.0		8.0	55.0			42.0	125.0
Effective Green, g (s)	2.0	34.0		23.0	55.0		9.0	56.0			43.0	125.0
Actuated g/C Ratio	0.02	0.27		0.18	0.44		0.07	0.45			0.34	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	2.5	4.3		2.5	4.3		2.5	2.5			2.5	
Lane Grp Cap (vph)	23	849		581	1419		116	651			1079	1473
v/s Ratio Prot	0.01	c0.28		c0.18	0.37		0.07	0.14				
v/s Ratio Perm											c0.36	c0.77
v/c Ratio	0.43	1.04		1.00	0.84		1.01	0.32			1.04	0.77
Uniform Delay, d1	60.9	45.5		51.0	31.1		58.0	22.2			41.0	0.0
Progression Factor	0.84	1.14		0.84	1.08		1.00	1.00			1.00	1.00
Incremental Delay, d2	5.2	33.6		28.8	3.7		85.9	0.2			38.3	4.0
Delay (s)	56.3	85.4		71.8	37.3		143.9	22.4			79.3	4.0
Level of Service	E	F		E	D		F	C			E	A
Approach Delay (s)		85.1			48.6			49.0			41.4	
Approach LOS		F			D			D			D	

Intersection Summary

HCM 2000 Control Delay	51.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	117.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
390: OR 99 EB & US 199

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑						↑↑	
Traffic Volume (vph)	0	1005	235	0	1725	0	0	0	0	50	495	45
Future Volume (vph)	0	1005	235	0	1725	0	0	0	0	50	495	45
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		0.95			0.95						0.95	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			1.00						1.00	
Satd. Flow (prot)		3137			3260						3234	
Flt Permitted		1.00			1.00						1.00	
Satd. Flow (perm)		3137			3260						3234	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1058	247	0	1816	0	0	0	0	53	521	47
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	1290	0	0	1816	0	0	0	0	0	616	0
Heavy Vehicles (%)	0%	3%	3%	0%	2%	0%	0%	0%	0%	0%	1%	5%
Turn Type		NA			NA					Perm	NA	
Protected Phases		6			2						4	
Permitted Phases										4		
Actuated Green, G (s)		87.3			87.3						27.7	
Effective Green, g (s)		87.3			87.3						27.7	
Actuated g/C Ratio		0.70			0.70						0.22	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		4.5			4.5						2.5	
Lane Grp Cap (vph)		2190			2276						716	
v/s Ratio Prot		0.41			0.56							
v/s Ratio Perm											0.19	
v/c Ratio		0.59			0.80						0.86	
Uniform Delay, d1		9.7			12.8						46.8	
Progression Factor		2.44			0.94						1.00	
Incremental Delay, d2		0.6			2.3						10.3	
Delay (s)		24.2			14.3						57.1	
Level of Service		C			B						E	
Approach Delay (s)		24.2			14.3			0.0			57.1	
Approach LOS		C			B			A			E	
Intersection Summary												
HCM 2000 Control Delay			24.9									C
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			125.0						10.0			
Intersection Capacity Utilization			78.1%									D
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
400: OR 99 WB & US 199

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↑	↑↑				
Traffic Volume (vph)	0	1055	0	0	1415	10	310	285	35	0	0	0
Future Volume (vph)	0	1055	0	0	1415	10	310	285	35	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0				
Lane Util. Factor		0.95			0.95	1.00	1.00	0.95				
Frt		1.00			1.00	0.85	1.00	0.98				
Flt Protected		1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)		3228			3260	1488	1630	3172				
Flt Permitted		1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)		3228			3260	1488	1630	3172				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1111	0	0	1489	11	326	300	37	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	3	0	8	0	0	0	0
Lane Group Flow (vph)	0	1111	0	0	1489	8	326	329	0	0	0	0
Heavy Vehicles (%)	0%	3%	0%	0%	2%	0%	2%	2%	12%	0%	0%	0%
Turn Type		NA			NA	Perm	Perm	NA				
Protected Phases		6			2			8				
Permitted Phases						2	8					
Actuated Green, G (s)		85.1			85.1	85.1	29.9	29.9				
Effective Green, g (s)		86.1			86.1	86.1	30.9	30.9				
Actuated g/C Ratio		0.69			0.69	0.69	0.25	0.25				
Clearance Time (s)		5.0			5.0	5.0	5.0	5.0				
Vehicle Extension (s)		4.5			4.5	4.5	2.5	2.5				
Lane Grp Cap (vph)		2223			2245	1024	402	784				
v/s Ratio Prot		0.34			0.46			0.10				
v/s Ratio Perm						0.01	0.20					
v/c Ratio		0.50			0.66	0.01	0.81	0.42				
Uniform Delay, d1		9.2			11.1	6.1	44.3	39.5				
Progression Factor		0.51			1.00	1.00	1.00	1.00				
Incremental Delay, d2		0.6			1.6	0.0	11.5	0.3				
Delay (s)		5.4			12.7	6.1	55.8	39.8				
Level of Service		A			B	A	E	D				
Approach Delay (s)		5.4			12.7			47.6			0.0	
Approach LOS		A			B			D			A	
Intersection Summary												
HCM 2000 Control Delay			17.3									B
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			125.0						8.0			
Intersection Capacity Utilization			78.1%									D
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
410: Parkdale Dr/Park St & US 199

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1020	40	585	1290	80	15	95	510	70	60	10
Future Volume (vph)	20	1020	40	585	1290	80	15	95	510	70	60	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.99	1.00		0.98	
Satd. Flow (prot)	1662	3260	1488	1662	3292	1488		1738	1488		1691	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.71	
Satd. Flow (perm)	1662	3260	1488	1662	3292	1488		1676	1488		1239	
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)	21	1052	41	603	1330	82	15	98	526	72	62	10
RTOR Reduction (vph)	0	0	25	0	0	17	0	0	15	0	3	0
Lane Group Flow (vph)	21	1052	16	603	1330	65	0	113	511	0	141	0
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	pm+ov	Perm	NA	
Protected Phases	1	6		5	2			4	5		8	
Permitted Phases			6			2	4		4	8		
Actuated Green, G (s)	1.9	35.5	35.5	30.1	63.7	63.7		14.0	44.1		14.0	
Effective Green, g (s)	1.9	37.5	37.5	30.1	65.7	65.7		15.0	44.1		15.0	
Actuated g/C Ratio	0.02	0.40	0.40	0.32	0.69	0.69		0.16	0.47		0.16	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0		5.0	4.0		5.0	
Vehicle Extension (s)	2.5	4.7	4.7	2.5	4.7	4.7		2.5	2.5		2.5	
Lane Grp Cap (vph)	33	1292	589	528	2286	1033		265	693		196	
v/s Ratio Prot	0.01	c0.32		c0.36	0.40				0.23			
v/s Ratio Perm			0.01			0.04		0.07	0.11		c0.11	
v/c Ratio	0.64	0.81	0.03	1.14	0.58	0.06		0.43	0.74		0.72	
Uniform Delay, d1	46.0	25.4	17.4	32.2	7.4	4.6		35.9	20.5		37.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	30.1	4.5	0.0	84.6	0.5	0.0		0.8	3.9		11.6	
Delay (s)	76.2	30.0	17.5	116.9	8.0	4.7		36.7	24.4		49.4	
Level of Service	E	C	B	F	A	A		D	C		D	
Approach Delay (s)		30.4			40.4			26.6			49.4	
Approach LOS		C			D			C			D	

Intersection Summary

HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	94.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
420: US 199 & M St

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	220	230	360	155	25	135	1160	345	15	1370	170
Future Volume (vph)	125	220	230	360	155	25	135	1160	345	15	1370	170
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1614	1733	1488	3225	1713		1646	3292	1473	1662	3292	1430
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1614	1733	1488	3225	1713		1646	3292	1473	1662	3292	1430
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)	133	234	245	383	165	27	144	1234	367	16	1457	181
RTOR Reduction (vph)	0	0	102	0	5	0	0	0	76	0	0	35
Lane Group Flow (vph)	133	234	143	383	187	0	144	1234	291	16	1457	146
Heavy Vehicles (%)	3%	1%	0%	0%	0%	0%	1%	1%	1%	0%	1%	4%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	3	8		7	4		1	6	7	5	2	3
Permitted Phases			8						6			2
Actuated Green, G (s)	12.7	19.7	19.7	16.1	23.1		12.0	67.9	84.0	1.9	57.8	70.5
Effective Green, g (s)	12.7	20.7	20.7	16.1	24.1		12.0	69.9	84.0	1.9	59.8	70.5
Actuated g/C Ratio	0.10	0.17	0.17	0.13	0.19		0.10	0.56	0.67	0.02	0.48	0.57
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	6.0	4.0	4.0	6.0	4.0
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	4.7	2.5	2.5	4.7	2.5
Lane Grp Cap (vph)	164	287	247	416	331		158	1846	993	25	1579	809
v/s Ratio Prot	0.08	c0.14		c0.12	c0.11		c0.09	0.37	0.04	0.01	c0.44	0.02
v/s Ratio Perm			0.10						0.16			0.08
v/c Ratio	0.81	0.82	0.58	0.92	0.57		0.91	0.67	0.29	0.64	0.92	0.18
Uniform Delay, d1	54.8	50.1	47.9	53.6	45.5		55.8	19.2	8.2	61.0	30.2	13.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	24.7	15.8	2.9	25.5	1.8		46.4	1.2	0.1	40.2	9.7	0.1
Delay (s)	79.5	65.9	50.8	79.1	47.3		102.1	20.4	8.4	101.2	39.9	13.2
Level of Service	E	E	D	E	D		F	C	A	F	D	B
Approach Delay (s)		62.8			68.5			24.6			37.6	
Approach LOS		E			E			C			D	

Intersection Summary

HCM 2000 Control Delay	39.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	124.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
430: F St/E St & US 199

No Build 2040 PM Peak
12/10/2018


























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↘		↖	↗↘	↗	↖	↗		↗↘	↗	
Traffic Volume (vph)	180	950	195	15	1065	455	240	215	15	565	190	255
Future Volume (vph)	180	950	195	15	1065	455	240	215	15	565	190	255
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		3.0	4.0	3.0	3.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.97	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.99		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3162		1662	3260	1458	1646	1690		3131	1575	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	3162		1662	3260	1458	1646	1690		3131	1575	
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)	191	1011	207	16	1133	484	255	229	16	601	202	271
RTOR Reduction (vph)	0	15	0	0	0	95	0	2	0	0	43	0
Lane Group Flow (vph)	191	1203	0	16	1133	389	255	243	0	601	430	0
Heavy Vehicles (%)	0%	3%	0%	0%	2%	2%	1%	2%	10%	3%	1%	2%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases						6						
Actuated Green, G (s)	10.3	45.7		1.6	35.0	58.7	15.0	22.0		23.7	30.7	
Effective Green, g (s)	12.3	47.7		2.6	37.0	60.7	16.0	23.0		23.7	31.7	
Actuated g/C Ratio	0.11	0.43		0.02	0.33	0.54	0.14	0.21		0.21	0.28	
Clearance Time (s)	6.0	6.0		4.0	6.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.5	4.7		2.5	4.7	2.5	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	182	1346		38	1076	790	235	347		662	445	
v/s Ratio Prot	c0.11	0.38		0.01	c0.35	0.11	c0.15	0.14		c0.19	c0.27	
v/s Ratio Perm						0.16						
v/c Ratio	1.05	0.89		0.42	1.05	0.49	1.09	0.70		0.91	0.97	
Uniform Delay, d1	49.9	29.8		54.0	37.5	16.0	48.0	41.3		43.1	39.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	80.4	9.4		5.4	42.5	0.4	83.2	5.6		16.2	33.7	
Delay (s)	130.2	39.2		59.4	80.0	16.4	131.2	46.9		59.3	73.3	
Level of Service	F	D		E	E	B	F	D		E	E	
Approach Delay (s)		51.5			60.9			89.9			65.5	
Approach LOS		D			E			F			E	

Intersection Summary

HCM 2000 Control Delay	62.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	112.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

























HCM Signalized Intersection Capacity Analysis
440: Beacon Dr & US 199

No Build 2040 PM Peak
12/10/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	1225	150	50	1115	220	140	115	65	170	155	245
Future Volume (vph)	150	1225	150	50	1115	220	140	115	65	170	155	245
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1662	3228	1488	1498	3228	1473	1646	1644		1662	1750	1473
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1662	3228	1488	1498	3228	1473	1646	1644		1662	1750	1473
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)	155	1263	155	52	1149	227	144	119	67	175	160	253
RTOR Reduction (vph)	0	0	39	0	0	63	0	20	0	0	0	45
Lane Group Flow (vph)	155	1263	116	52	1149	164	144	166	0	175	160	208
Heavy Vehicles (%)	0%	3%	0%	11%	3%	1%	1%	0%	2%	0%	0%	1%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases			2			6						4
Actuated Green, G (s)	15.5	60.5	60.5	8.7	53.7	53.7	13.0	19.3		13.5	19.8	35.3
Effective Green, g (s)	15.5	62.5	62.5	8.7	55.7	55.7	13.0	19.3		13.5	19.8	35.3
Actuated g/C Ratio	0.13	0.52	0.52	0.07	0.46	0.46	0.11	0.16		0.11	0.17	0.29
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.5	4.7	4.7	2.5	4.7	4.7	2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	214	1681	775	108	1498	683	178	264		186	288	482
v/s Ratio Prot	c0.09	c0.39		0.03	0.36		0.09	c0.10		c0.11	0.09	0.06
v/s Ratio Perm			0.08			0.11						0.09
v/c Ratio	0.72	0.75	0.15	0.48	0.77	0.24	0.81	0.63		0.94	0.56	0.43
Uniform Delay, d1	50.2	22.6	14.9	53.5	26.8	19.4	52.3	47.0		52.9	46.1	34.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	10.8	3.1	0.4	2.5	3.8	0.8	22.4	4.0		49.0	1.9	0.5
Delay (s)	61.0	25.8	15.3	55.9	30.6	20.2	74.7	51.0		101.8	47.9	34.7
Level of Service	E	C	B	E	C	C	E	D		F	D	C
Approach Delay (s)		28.2			29.8			61.3			58.3	
Approach LOS		C			C			E			E	
Intersection Summary												
HCM 2000 Control Delay			36.1									HCM 2000 Level of Service D
HCM 2000 Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			120.0								16.0	Sum of lost time (s)
Intersection Capacity Utilization			76.9%									ICU Level of Service D
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
450: Terry Ln & US 199























No Build 2040 PM Peak
12/10/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1005	335	120	935	30	290	155	110	30	105	85
Future Volume (vph)	20	1005	335	120	935	30	290	155	110	30	105	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3228	1452	1646	3228	1454	3225	1632		1498	1578	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	3228	1452	1646	3228	1454	3225	1632		1498	1578	
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)	21	1047	349	125	974	31	302	161	115	31	109	89
RTOR Reduction (vph)	0	0	84	0	0	15	0	19	0	0	22	0
Lane Group Flow (vph)	21	1047	265	125	974	16	302	257	0	31	176	0
Confl. Peds. (#/hr)	1		2	2		1	4		1	1		4
Heavy Vehicles (%)	0%	3%	0%	1%	3%	0%	0%	0%	0%	11%	0%	6%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	2.0	44.5	44.5	12.6	57.1	57.1	15.2	32.5		3.7	21.0	
Effective Green, g (s)	2.0	46.5	46.5	14.6	59.1	59.1	15.2	32.5		3.7	21.0	
Actuated g/C Ratio	0.02	0.41	0.41	0.13	0.52	0.52	0.13	0.29		0.03	0.19	
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0	6.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.5	4.7	4.7	2.5	4.7	4.7	2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	29	1324	595	212	1683	758	432	468		48	292	
v/s Ratio Prot	0.01	c0.32		c0.08	0.30		c0.09	c0.16		0.02	0.11	
v/s Ratio Perm			0.18			0.01						
v/c Ratio	0.72	0.79	0.44	0.59	0.58	0.02	0.70	0.55		0.65	0.60	
Uniform Delay, d1	55.4	29.2	24.1	46.5	18.6	13.1	46.9	34.2		54.2	42.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	58.8	3.7	1.0	3.4	0.7	0.0	4.5	1.1		23.4	2.9	
Delay (s)	114.2	32.9	25.1	50.0	19.3	13.1	51.4	35.3		77.5	45.3	
Level of Service	F	C	C	D	B	B	D	D		E	D	
Approach Delay (s)		32.2			22.5			43.7			49.6	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			32.1									C
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			113.3							16.0		
Intersection Capacity Utilization			73.7%									D
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
460: Agness Ave & US 199

No Build 2040 PM Peak
12/10/2018

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	45	1015	85	240	985	160	65	100	320	105	100	35	
Future Volume (vph)	45	1015	85	240	985	160	65	100	320	105	100	35	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00		
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00		1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.89		1.00	0.96		
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1630	3228	1447	1614	3260	1454	1660	1504		1662	1676		
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.67	1.00		0.12	1.00		
Satd. Flow (perm)	1630	3228	1447	1614	3260	1454	1167	1504		203	1676		
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)	47	1057	89	250	1026	167	68	104	333	109	104	36	
RTOR Reduction (vph)	0	0	56	0	0	40	0	73	0	0	8	0	
Lane Group Flow (vph)	47	1057	33	250	1026	127	68	364	0	109	132	0	
Confl. Peds. (#/hr)	1		3	3		1	2					2	
Heavy Vehicles (%)	2%	3%	0%	3%	2%	0%	0%	0%	4%	0%	0%	0%	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		pm+pt	NA		
Protected Phases	5	2		1	6		7	4		3	8		
Permitted Phases			2			6	4			8			
Actuated Green, G (s)	6.9	52.0	52.0	26.0	71.1	71.1	43.2	39.5		52.3	44.6		
Effective Green, g (s)	6.9	54.0	54.0	26.0	73.1	73.1	43.2	39.5		52.3	44.6		
Actuated g/C Ratio	0.05	0.37	0.37	0.18	0.51	0.51	0.30	0.27		0.36	0.31		
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	4.0		4.0	4.0		
Vehicle Extension (s)	2.5	4.7	4.7	2.5	4.7	4.7	2.5	2.5		2.5	2.5		
Lane Grp Cap (vph)	77	1207	541	290	1651	736	362	411		162	518		
v/s Ratio Prot	0.03	c0.33		c0.15	0.31		0.00	c0.24		c0.04	0.08		
v/s Ratio Perm			0.02			0.09	0.05			0.20			
v/c Ratio	0.61	0.88	0.06	0.86	0.62	0.17	0.19	0.89		0.67	0.26		
Uniform Delay, d1	67.4	42.0	28.9	57.4	25.6	19.2	36.9	50.3		35.8	37.4		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	11.6	7.9	0.1	22.0	1.0	0.2	0.2	19.8		9.6	0.2		
Delay (s)	79.0	49.9	29.0	79.4	26.6	19.5	37.1	70.1		45.4	37.6		
Level of Service	E	D	C	E	C	B	D	E		D	D		
Approach Delay (s)		49.5			34.9			65.6			41.0		
Approach LOS		D			C			E			D		
Intersection Summary													
HCM 2000 Control Delay			45.1									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.86										
Actuated Cycle Length (s)			144.3									Sum of lost time (s)	16.0
Intersection Capacity Utilization			91.6%									ICU Level of Service	F
Analysis Period (min)			15										

c Critical Lane Group

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗		↑						↕	
Traffic Vol, veh/h	0	480	960	0	935	0	0	0	0	5	0	450
Future Vol, veh/h	0	480	960	0	935	0	0	0	0	5	0	450
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16965	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	5	6	0	6	0	0	0	0	0	0	7
Mvmt Flow	0	490	980	0	954	0	0	0	0	5	0	459

Major/Minor	Major1			Major2			Minor2			
Conflicting Flow All	-	0	-	-	-	0		1444	1444	-
Stage 1	-	-	-	-	-	-		954	954	-
Stage 2	-	-	-	-	-	-		490	490	-
Critical Hdwy	-	-	-	-	-	-		6.4	6.5	-
Critical Hdwy Stg 1	-	-	-	-	-	-		5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-		5.4	5.5	-
Follow-up Hdwy	-	-	-	-	-	-		3.5	4	-
Pot Cap-1 Maneuver	0	-	0	0	-	0		147	133	0
Stage 1	0	-	0	0	-	0		377	340	0
Stage 2	0	-	0	0	-	0		620	552	0
Platoon blocked, %		-			-					
Mov Cap-1 Maneuver	-	-	-	-	-	-		147	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-		147	0	-
Stage 1	-	-	-	-	-	-		377	0	-
Stage 2	-	-	-	-	-	-		620	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	
HCM LOS			-

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection												
Int Delay, s/veh	46.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔				
Traffic Vol, veh/h	55	165	0	0	155	60	5	695	160	0	0	0
Future Vol, veh/h	55	165	0	0	155	60	5	695	160	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Stop	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	1	1	0	0	0
Mvmt Flow	62	185	0	0	174	67	6	781	180	0	0	0

Major/Minor	Minor2		Minor1		Major1						
Conflicting Flow All	970	973	-	-	883	871	0	0	0		
Stage 1	0	0	-	-	883	-	-	-	-		
Stage 2	970	973	-	-	0	-	-	-	-		
Critical Hdwy	7.1	6.5	-	-	6.5	6.2	4.1	-	-		
Critical Hdwy Stg 1	-	-	-	-	5.5	-	-	-	-		
Critical Hdwy Stg 2	6.1	5.5	-	-	-	-	-	-	-		
Follow-up Hdwy	3.5	4	-	-	4	3.3	2.2	-	-		
Pot Cap-1 Maneuver	235	254	0	0	287	353	-	-	-		
Stage 1	-	-	0	0	367	-	-	-	-		
Stage 2	307	333	0	0	-	-	-	-	-		
Platoon blocked, %								-	-		
Mov Cap-1 Maneuver	98	254	-	-	287	353	-	-	-		
Mov Cap-2 Maneuver	98	254	-	-	287	-	-	-	-		
Stage 1	-	-	-	-	367	-	-	-	-		
Stage 2	131	333	-	-	-	-	-	-	-		

Approach	EB		WB		NB		
HCM Control Delay, s	241.7		32				
HCM LOS	F		D				

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	
Capacity (veh/h)	-	-	-	182	366
HCM Lane V/C Ratio	-	-	-	1.358	0.66
HCM Control Delay (s)	-	-	-	241.7	32
HCM Lane LOS	-	-	-	F	D
HCM 95th %tile Q(veh)	-	-	-	14.5	4.5

Intersection												
Int Delay, s/veh	979.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	5	15	35	140	5	5	30	460	25	190	1515	5
Future Vol, veh/h	5	15	35	140	5	5	30	460	25	190	1515	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	5	16	38	152	5	5	33	500	27	207	1647	5

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	2383	2657	826	1826	2646	264	1652	0	0	527	0	0
Stage 1	2064	2064	-	580	580	-	-	-	-	-	-	-
Stage 2	319	593	-	1246	2066	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	18	23	319	~49	24	741	396	-	-	1050	-	-
Stage 1	57	98	-	472	503	-	-	-	-	-	-	-
Stage 2	673	497	-	187	98	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	11	17	319	~5	18	741	396	-	-	1050	-	-
Mov Cap-2 Maneuver	11	17	-	~5	18	-	-	-	-	-	-	-
Stage 1	52	79	-	433	461	-	-	-	-	-	-	-
Stage 2	605	456	-	~105	79	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	\$ 518		\$ 15656.5		0.9		1	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	396	-	-	38	5	1050	-
HCM Lane V/C Ratio	0.082	-	-	1.573	32.609	0.197	-
HCM Control Delay (s)	14.9	-	-	\$ 518	15656.5	9.3	-
HCM Lane LOS	B	-	-	F	F	A	-
HCM 95th %tile Q(veh)	0.3	-	-	6.3	22.5	0.7	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis
500: OR 238 & Union Ave/Harbeck Rd

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖	↖	↕		↖	↗	
Traffic Volume (vph)	335	75	65	25	60	145	55	1015	15	145	1365	265
Future Volume (vph)	335	75	65	25	60	145	55	1015	15	145	1365	265
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1628		1662	1750	1488	1662	3285		1662	3239	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1662	1628		1662	1750	1488	1662	3285		1662	3239	
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)	349	78	68	26	62	151	57	1057	16	151	1422	276
RTOR Reduction (vph)	0	27	0	0	0	69	0	1	0	0	10	0
Lane Group Flow (vph)	349	119	0	26	63	82	57	1072	0	151	1688	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4	5	1	6		5		
Permitted Phases						4						2
Actuated Green, G (s)	22.1	27.0		3.5	8.4	21.1	5.0	51.0		12.7	58.7	
Effective Green, g (s)	22.1	27.0		3.5	8.4	21.1	5.0	52.5		12.7	60.2	
Actuated g/C Ratio	0.20	0.24		0.03	0.08	0.19	0.04	0.47		0.11	0.54	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.5		4.0	5.5	
Vehicle Extension (s)	2.5	2.5		4.5	2.5	2.5	2.5	3.0		2.5	4.5	
Lane Grp Cap (vph)	328	393		52	131	334	74	1543		188	1745	
v/s Ratio Prot	c0.21	0.07		0.02	c0.04	0.03	0.03	0.33		c0.09		
v/s Ratio Perm						0.03						c0.52
v/c Ratio	1.06	0.30		0.50	0.48	0.25	0.77	0.70		0.80	0.97	
Uniform Delay, d1	44.8	34.6		53.2	49.6	38.5	52.8	23.3		48.3	24.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	67.7	0.3		12.5	2.0	0.3	36.8	1.4		20.9	14.6	
Delay (s)	112.5	35.0		65.7	51.6	38.8	89.6	24.7		69.2	39.4	
Level of Service	F	C		E	D	D	F	C		E	D	
Approach Delay (s)		89.6			45.1			28.0			41.9	
Approach LOS		F			D			C			D	

Intersection Summary

HCM 2000 Control Delay	44.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	111.7	Sum of lost time (s)	17.5
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑↑		↕	↑↑	
Traffic Vol, veh/h	40	35	140	50	40	110	35	875	35	80	1250	35
Future Vol, veh/h	40	35	140	50	40	110	35	875	35	80	1250	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	0	3	1	0	0	0	0
Mvmt Flow	42	37	147	53	42	116	37	921	37	84	1316	37

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2059	2535	677	1859	2535	479	1353	0	0	958	0	0
Stage 1	1503	1503	-	1014	1014	-	-	-	-	-	-	-
Stage 2	556	1032	-	845	1521	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.92	7.5	6.5	6.9	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.31	3.5	4	3.3	2.23	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 33	~ 28	398	~ 46	~ 28	538	499	-	-	726	-	-
Stage 1	130	186	-	259	319	-	-	-	-	-	-	-
Stage 2	488	313	-	328	183	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	-	~ 23	398	-	~ 23	538	499	-	-	726	-	-
Mov Cap-2 Maneuver	-	~ 23	-	-	~ 23	-	-	-	-	-	-	-
Stage 1	120	164	-	240	295	-	-	-	-	-	-	-
Stage 2	304	290	-	142	162	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			0.5	0.6
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	499	-	-	-	726	-	-
HCM Lane V/C Ratio	0.074	-	-	-	0.116	-	-
HCM Control Delay (s)	12.8	-	-	-	10.6	-	-
HCM Lane LOS	B	-	-	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-	0.4	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis
520: OR 238 & Harbeck Rd

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (vph)	65	25	170	30	25	5	85	745	20	5	1190	150
Future Volume (vph)	65	25	170	30	25	5	85	745	20	5	1190	150
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.91			0.99		1.00	1.00		1.00	0.98	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1576			1673		1662	3280		1662	3240	
Flt Permitted		0.90			0.72		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1440			1232		1662	3280		1662	3240	
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)	70	27	183	32	27	5	91	801	22	5	1280	161
RTOR Reduction (vph)	0	64	0	0	3	0	0	2	0	0	9	0
Lane Group Flow (vph)	0	216	0	0	61	0	91	821	0	5	1432	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%	0%	1%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4								
Actuated Green, G (s)		17.5			17.5		6.9	50.6		0.8	44.5	
Effective Green, g (s)		18.5			18.5		7.4	52.1		1.3	46.0	
Actuated g/C Ratio		0.22			0.22		0.09	0.62		0.02	0.55	
Clearance Time (s)		5.0			5.0		4.5	5.5		4.5	5.5	
Vehicle Extension (s)		2.5			2.5		2.5	3.7		2.5	3.7	
Lane Grp Cap (vph)		317			271		146	2036		25	1776	
v/s Ratio Prot							c0.05	0.25		0.00	c0.44	
v/s Ratio Perm		c0.15			0.05							
v/c Ratio		0.68			0.22		0.62	0.40		0.20	0.81	
Uniform Delay, d1		30.0			26.8		36.9	8.0		40.8	15.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.4			0.3		7.0	0.2		2.9	2.9	
Delay (s)		35.4			27.1		43.9	8.2		43.6	18.2	
Level of Service		D			C		D	A		D	B	
Approach Delay (s)		35.4			27.1			11.8			18.3	
Approach LOS		D			C			B			B	

Intersection Summary

HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	83.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
530: OR 238 & New Hope Rd

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	235	10	5	535	835	435
Future Volume (vph)	235	10	5	535	835	435
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frt	0.99		1.00	1.00	0.95	
Flt Protected	0.95		0.95	1.00	1.00	
Satd. Flow (prot)	1661		1662	3260	3143	
Flt Permitted	0.95		0.15	1.00	1.00	
Satd. Flow (perm)	1661		255	3260	3143	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	245	10	5	557	870	453
RTOR Reduction (vph)	2	0	0	0	87	0
Lane Group Flow (vph)	253	0	5	557	1236	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	1%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	8			6	2	
Permitted Phases			6			
Actuated Green, G (s)	13.0		26.0	26.0	26.0	
Effective Green, g (s)	14.4		27.4	27.4	27.4	
Actuated g/C Ratio	0.29		0.55	0.55	0.55	
Clearance Time (s)	5.4		5.4	5.4	5.4	
Vehicle Extension (s)	2.5		4.5	4.5	4.5	
Lane Grp Cap (vph)	480		140	1793	1729	
v/s Ratio Prot	c0.15			0.17	c0.39	
v/s Ratio Perm			0.02			
v/c Ratio	0.53		0.04	0.31	0.71	
Uniform Delay, d1	14.8		5.1	6.1	8.3	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.8		0.2	0.2	1.6	
Delay (s)	15.6		5.3	6.2	9.9	
Level of Service	B		A	A	A	
Approach Delay (s)	15.6			6.2	9.9	
Approach LOS	B			A	A	

Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	49.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	165	65	40	220	5	55	5	15	5	5	5
Future Vol, veh/h	5	165	65	40	220	5	55	5	15	5	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	2	0	0	3	0	0	0	0	0	0	0
Mvmt Flow	6	204	80	49	272	6	68	6	19	6	6	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	278	0	0	284	0	0	635	632	244	642	669	275
Stage 1	-	-	-	-	-	-	256	256	-	373	373	-
Stage 2	-	-	-	-	-	-	379	376	-	269	296	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1296	-	-	1290	-	-	394	400	800	390	381	769
Stage 1	-	-	-	-	-	-	753	699	-	652	622	-
Stage 2	-	-	-	-	-	-	647	620	-	741	672	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1296	-	-	1290	-	-	371	380	800	362	362	769
Mov Cap-2 Maneuver	-	-	-	-	-	-	371	380	-	362	362	-
Stage 1	-	-	-	-	-	-	748	695	-	648	594	-
Stage 2	-	-	-	-	-	-	607	592	-	713	668	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			1.2			16.1			13.5		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	416	1296	-	-	1290	-	-	440
HCM Lane V/C Ratio	0.223	0.005	-	-	0.038	-	-	0.042
HCM Control Delay (s)	16.1	7.8	0	-	7.9	0	-	13.5
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0.1	-	-	0.1

Intersection												
Int Delay, s/veh	6.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	35	20	50	50	100	20	110	70	60	100	5
Future Vol, veh/h	5	35	20	50	50	100	20	110	70	60	100	5
Conflicting Peds, #/hr	0	0	2	2	0	0	3	0	5	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	38	22	54	54	108	22	118	75	65	108	5

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	525	486	116	478	451	161	116	0	0	198	0	0
Stage 1	244	244	-	205	205	-	-	-	-	-	-	-
Stage 2	281	242	-	273	246	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	466	484	942	501	507	889	1485	-	-	1387	-	-
Stage 1	764	708	-	802	736	-	-	-	-	-	-	-
Stage 2	730	709	-	737	706	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	354	448	938	432	469	885	1481	-	-	1380	-	-
Mov Cap-2 Maneuver	354	448	-	432	469	-	-	-	-	-	-	-
Stage 1	749	670	-	784	720	-	-	-	-	-	-	-
Stage 2	583	693	-	644	669	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.8		14.4		0.7		2.8	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1481	-	-	528	596	1380	-
HCM Lane V/C Ratio	0.015	-	-	0.122	0.361	0.047	-
HCM Control Delay (s)	7.5	0	-	12.8	14.4	7.7	0
HCM Lane LOS	A	A	-	B	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0.4	1.6	0.1	-

Intersection						
Int Delay, s/veh	4.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	70	115	220	45	35	210
Future Vol, veh/h	70	115	220	45	35	210
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	80	131	250	51	40	239

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	595	276	0	0	301
Stage 1	276	-	-	-	-
Stage 2	319	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	470	768	-	-	1272
Stage 1	775	-	-	-	-
Stage 2	741	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	453	768	-	-	1272
Mov Cap-2 Maneuver	453	-	-	-	-
Stage 1	747	-	-	-	-
Stage 2	741	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14	0	1.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	608	1272
HCM Lane V/C Ratio	-	-	0.346	0.031
HCM Control Delay (s)	-	-	14	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.5	0.1

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	5	5	5	5	25	5	310	5	15	285	5
Future Vol, veh/h	5	5	5	5	5	25	5	310	5	15	285	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	5	5	5	5	27	5	337	5	16	310	5

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	711	697	313	700	697	340	315	0	0	342	0	0
Stage 1	345	345	-	350	350	-	-	-	-	-	-	-
Stage 2	366	352	-	350	347	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	351	367	732	357	367	707	1257	-	-	1228	-	-
Stage 1	675	640	-	671	636	-	-	-	-	-	-	-
Stage 2	657	635	-	671	638	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	328	359	732	345	359	707	1257	-	-	1228	-	-
Mov Cap-2 Maneuver	328	359	-	345	359	-	-	-	-	-	-	-
Stage 1	672	630	-	668	633	-	-	-	-	-	-	-
Stage 2	623	632	-	650	628	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14		12		0.1		0.4	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1257	-	-	417	549	1228	-
HCM Lane V/C Ratio	0.004	-	-	0.039	0.069	0.013	-
HCM Control Delay (s)	7.9	0	-	14	12	8	0
HCM Lane LOS	A	A	-	B	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-

Intersection												
Int Delay, s/veh	6.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	10	5	25	10	200	5	120	10	135	195	5
Future Vol, veh/h	5	10	5	25	10	200	5	120	10	135	195	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	1	0	0
Mvmt Flow	6	11	6	28	11	227	6	136	11	153	222	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	804	690	225	694	688	142	228	0	0	147	0	0
Stage 1	531	531	-	154	154	-	-	-	-	-	-	-
Stage 2	273	159	-	540	534	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.209	-	-
Pot Cap-1 Maneuver	304	371	819	360	372	911	1352	-	-	1441	-	-
Stage 1	536	529	-	853	774	-	-	-	-	-	-	-
Stage 2	737	770	-	530	528	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	201	324	819	314	325	911	1352	-	-	1441	-	-
Mov Cap-2 Maneuver	201	324	-	314	325	-	-	-	-	-	-	-
Stage 1	533	464	-	849	770	-	-	-	-	-	-	-
Stage 2	542	766	-	451	464	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17	13.1	0.3	3.1
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1352	-	-	323	712	1441	-
HCM Lane V/C Ratio	0.004	-	-	0.07	0.375	0.106	-
HCM Control Delay (s)	7.7	0	-	17	13.1	7.8	0
HCM Lane LOS	A	A	-	C	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0.2	1.7	0.4	-

Intersection						
Int Delay, s/veh	12.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	185	110	175	390	120	115
Future Vol, veh/h	185	110	175	390	120	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	201	120	190	424	130	125

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	321	0	1065
Stage 1	-	-	-	-	261
Stage 2	-	-	-	-	804
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1250	-	249
Stage 1	-	-	-	-	787
Stage 2	-	-	-	-	444
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1250	-	199
Mov Cap-2 Maneuver	-	-	-	-	199
Stage 1	-	-	-	-	630
Stage 2	-	-	-	-	444

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	52.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	313	-	-	1250	-
HCM Lane V/C Ratio	0.816	-	-	0.152	-
HCM Control Delay (s)	52.2	-	-	8.4	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	6.8	-	-	0.5	-

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	365	5	0	615	5	5	5	0	5	5	5
Future Vol, veh/h	5	365	5	0	615	5	5	5	0	5	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	410	6	0	691	6	6	6	0	6	6	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	697	0	0	416	0	0	1125	1122	413	1122	1122	694
Stage 1	-	-	-	-	-	-	425	425	-	694	694	-
Stage 2	-	-	-	-	-	-	700	697	-	428	428	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	909	-	-	1154	-	-	184	208	643	185	208	446
Stage 1	-	-	-	-	-	-	611	590	-	436	447	-
Stage 2	-	-	-	-	-	-	433	446	-	609	588	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	909	-	-	1154	-	-	177	206	643	180	206	446
Mov Cap-2 Maneuver	-	-	-	-	-	-	177	206	-	180	206	-
Stage 1	-	-	-	-	-	-	606	585	-	432	447	-
Stage 2	-	-	-	-	-	-	422	446	-	598	583	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	25.1	21.4
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	190	909	-	-	1154	-	-	237
HCM Lane V/C Ratio	0.059	0.006	-	-	-	-	-	0.071
HCM Control Delay (s)	25.1	9	0	-	0	-	-	21.4
HCM Lane LOS	D	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.2

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	415	10	15	745	5	20	5	10	5	5	5
Future Vol, veh/h	5	415	10	15	745	5	20	5	10	5	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	472	11	17	847	6	23	6	11	6	6	6

















Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	853	0	0	483	0	0	1380	1377	478	1382	1379	850
Stage 1	-	-	-	-	-	-	490	490	-	884	884	-
Stage 2	-	-	-	-	-	-	890	887	-	498	495	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	795	-	-	1090	-	-	123	146	591	122	146	363
Stage 1	-	-	-	-	-	-	564	552	-	343	366	-
Stage 2	-	-	-	-	-	-	340	365	-	558	549	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	795	-	-	1090	-	-	114	140	591	112	140	363
Mov Cap-2 Maneuver	-	-	-	-	-	-	114	140	-	112	140	-
Stage 1	-	-	-	-	-	-	558	546	-	340	355	-
Stage 2	-	-	-	-	-	-	319	354	-	536	544	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.2			36.6			30.3		
HCM LOS							E			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	153	795	-	-	1090	-	-	159
HCM Lane V/C Ratio	0.26	0.007	-	-	0.016	-	-	0.107
HCM Control Delay (s)	36.6	9.6	0	-	8.4	0	-	30.3
HCM Lane LOS	E	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	1	0	-	-	0	-	-	0.4

HCM Signalized Intersection Capacity Analysis
620: 4th St & E St

No Build 2040 PM Peak
12/10/2018

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	0	0	0	80	430	55	15	295	0	0	355	100	
Future Volume (vph)	0	0	0	80	430	55	15	295	0	0	355	100	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Total Lost time (s)					4.0		4.0	4.0				4.0	
Lane Util. Factor					0.95		1.00	1.00				1.00	
Frt					0.99		1.00	1.00				0.97	
Flt Protected					0.99		0.95	1.00				1.00	
Satd. Flow (prot)					3247		1662	1750				1698	
Flt Permitted					0.99		0.37	1.00				1.00	
Satd. Flow (perm)					3247		650	1750				1698	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	
Adj. Flow (vph)	0	0	0	95	512	65	18	351	0	0	423	119	
RTOR Reduction (vph)	0	0	0	0	21	0	0	0	0	0	15	0	
Lane Group Flow (vph)	0	0	0	0	651	0	18	351	0	0	527	0	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	
Turn Type				Perm	NA		Perm	NA				NA	
Protected Phases					4			6				2	
Permitted Phases				4			6						
Actuated Green, G (s)					14.0		28.0	28.0				28.0	
Effective Green, g (s)					14.0		28.0	28.0				28.0	
Actuated g/C Ratio					0.28		0.56	0.56				0.56	
Clearance Time (s)					4.0		4.0	4.0				4.0	
Vehicle Extension (s)					0.2		0.2	0.2				0.2	
Lane Grp Cap (vph)					909		364	980				950	
v/s Ratio Prot								0.20				c0.31	
v/s Ratio Perm					0.20		0.03						
v/c Ratio					0.72		0.05	0.36				0.55	
Uniform Delay, d1					16.2		5.0	6.1				7.0	
Progression Factor					1.00		0.72	0.79				1.00	
Incremental Delay, d2					2.3		0.2	1.0				2.3	
Delay (s)					18.5		3.8	5.7				9.4	
Level of Service					B		A	A				A	
Approach Delay (s)		0.0			18.5			5.7				9.4	
Approach LOS		A			B			A				A	
Intersection Summary													
HCM 2000 Control Delay			12.4		HCM 2000 Level of Service							B	
HCM 2000 Volume to Capacity ratio			0.61										
Actuated Cycle Length (s)			50.0		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													

HCM Signalized Intersection Capacity Analysis
630: 4th St & F St

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕↕						↔		↕	↕		
Traffic Volume (vph)	85	225	40	0	0	0	0	235	70	55	395	0	
Future Volume (vph)	85	225	40	0	0	0	0	235	70	55	395	0	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Total Lost time (s)		4.0						4.0		4.0	4.0		
Lane Util. Factor		0.95						1.00		1.00	1.00		
Frt		0.98						0.97		1.00	1.00		
Flt Protected		0.99						1.00		0.95	1.00		
Satd. Flow (prot)		3228						1696		1662	1750		
Flt Permitted		0.99						1.00		0.51	1.00		
Satd. Flow (perm)		3228						1696		897	1750		
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	
Adj. Flow (vph)	108	285	51	0	0	0	0	297	89	70	500	0	
RTOR Reduction (vph)	0	28	0	0	0	0	0	14	0	0	0	0	
Lane Group Flow (vph)	0	416	0	0	0	0	0	372	0	70	500	0	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Turn Type	Perm	NA						NA		Perm	NA		
Protected Phases		8						6			2		
Permitted Phases	8									2			
Actuated Green, G (s)		11.1						30.9		30.9	30.9		
Effective Green, g (s)		11.1						30.9		30.9	30.9		
Actuated g/C Ratio		0.22						0.62		0.62	0.62		
Clearance Time (s)		4.0						4.0		4.0	4.0		
Vehicle Extension (s)		0.2						0.2		0.2	0.2		
Lane Grp Cap (vph)		716						1048		554	1081		
v/s Ratio Prot								0.22			c0.29		
v/s Ratio Perm		0.13								0.08			
v/c Ratio		0.58						0.36		0.13	0.46		
Uniform Delay, d1		17.4						4.7		4.0	5.1		
Progression Factor		1.00						1.00		1.18	1.00		
Incremental Delay, d2		0.8						0.9		0.4	1.3		
Delay (s)		18.2						5.6		5.1	6.4		
Level of Service		B						A		A	A		
Approach Delay (s)		18.2			0.0			5.6			6.2		
Approach LOS		B			A			A			A		
Intersection Summary													
HCM 2000 Control Delay			9.8									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.49										
Actuated Cycle Length (s)			50.0									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													

HCM Signalized Intersection Capacity Analysis
640: 4th St & G St

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	10	145	45	30	250	75	55	175	35	55	355	30
Future Volume (vph)	10	145	45	30	250	75	55	175	35	55	355	30
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.97		1.00	0.98		1.00	0.99	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1692			1693		1662	1706		1662	1714	
Flt Permitted		0.98			0.96		0.31	1.00		0.56	1.00	
Satd. Flow (perm)		1658			1629		543	1706		985	1714	
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	12	179	56	37	309	93	68	216	43	68	438	37
RTOR Reduction (vph)	0	19	0	0	17	0	0	12	0	0	5	0
Lane Group Flow (vph)	0	228	0	0	422	0	68	247	0	68	470	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		16.1			16.1		21.4	18.9		21.4	18.9	
Effective Green, g (s)		16.1			16.1		21.4	18.9		21.4	18.9	
Actuated g/C Ratio		0.33			0.33		0.43	0.38		0.43	0.38	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		2.5			2.5		2.5	6.1		2.5	6.1	
Lane Grp Cap (vph)		539			529		291	651		460	654	
v/s Ratio Prot							c0.01	0.14		0.01	c0.27	
v/s Ratio Perm		0.14			c0.26		0.09			0.06		
v/c Ratio		0.42			0.80		0.23	0.38		0.15	0.72	
Uniform Delay, d1		13.1			15.2		8.8	11.1		8.3	13.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			8.0		0.3	1.1		0.1	5.5	
Delay (s)		13.5			23.2		9.2	12.1		8.4	18.5	
Level of Service		B			C		A	B		A	B	
Approach Delay (s)		13.5			23.2			11.5			17.3	
Approach LOS		B			C			B			B	

Intersection Summary

HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	49.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection

Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	145	5	5	90	130	205
Future Vol, veh/h	145	5	5	90	130	205
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	0	0	0	0	1
Mvmt Flow	159	5	5	99	143	225
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	9.7	8.5	10.1
HCM LOS	A	A	B

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	5%	97%	0%
Vol Thru, %	95%	0%	39%
Vol Right, %	0%	3%	61%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	95	150	335
LT Vol	5	145	0
Through Vol	90	0	130
RT Vol	0	5	205
Lane Flow Rate	104	165	368
Geometry Grp	1	1	1
Degree of Util (X)	0.137	0.234	0.419
Departure Headway (Hd)	4.725	5.107	4.095
Convergence, Y/N	Yes	Yes	Yes
Cap	758	701	880
Service Time	2.763	3.156	2.12
HCM Lane V/C Ratio	0.137	0.235	0.418
HCM Control Delay	8.5	9.7	10.1
HCM Lane LOS	A	A	B
HCM 95th-tile Q	0.5	0.9	2.1

Intersection						
Int Delay, s/veh	65.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	70	485	730	85	170	65
Future Vol, veh/h	70	485	730	85	170	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	70	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	77	533	802	93	187	71

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	895	0	-	0	1536 849
Stage 1	-	-	-	-	849 -
Stage 2	-	-	-	-	687 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	767	-	-	-	~ 129 364
Stage 1	-	-	-	-	423 -
Stage 2	-	-	-	-	503 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	767	-	-	-	~ 116 364
Mov Cap-2 Maneuver	-	-	-	-	~ 116 -
Stage 1	-	-	-	-	381 -
Stage 2	-	-	-	-	503 -

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	\$ 442.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	767	-	-	-	143
HCM Lane V/C Ratio	0.1	-	-	-	1.806
HCM Control Delay (s)	10.2	-	-	-	\$ 442.4
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	19.4

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection												
Int Delay, s/veh	5.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↔	↔			↔			↔	
Traffic Vol, veh/h	5	640	15	80	790	20	15	20	65	5	5	10
Future Vol, veh/h	5	640	15	80	790	20	15	20	65	5	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	1	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	696	16	87	859	22	16	22	71	5	5	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	881	0	0	712	0	0	1766	1769	356	1413	1766	870
Stage 1	-	-	-	-	-	-	714	714	-	1044	1044	-
Stage 2	-	-	-	-	-	-	1052	1055	-	369	722	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.3	6.5	6.9	7.3	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	776	-	-	897	-	-	60	84	646	108	85	354
Stage 1	-	-	-	-	-	-	393	438	-	279	309	-
Stage 2	-	-	-	-	-	-	276	305	-	629	434	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	776	-	-	897	-	-	51	75	646	69	76	354
Mov Cap-2 Maneuver	-	-	-	-	-	-	51	75	-	69	76	-
Stage 1	-	-	-	-	-	-	389	433	-	276	279	-
Stage 2	-	-	-	-	-	-	237	275	-	526	429	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.8			74			41.5		
HCM LOS							F			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	151	776	-	-	897	-	-	120
HCM Lane V/C Ratio	0.72	0.007	-	-	0.097	-	-	0.181
HCM Control Delay (s)	74	9.7	0.1	-	9.4	-	-	41.5
HCM Lane LOS	F	A	A	-	A	-	-	E
HCM 95th %tile Q(veh)	4.3	0	-	-	0.3	-	-	0.6

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑		↑	
Traffic Vol, veh/h	10	285	165	25	40	10
Future Vol, veh/h	10	285	165	25	40	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	11	320	185	28	45	11

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	213	0	-	0	381 199
Stage 1	-	-	-	-	199 -
Stage 2	-	-	-	-	182 -
Critical Hdwy	4.1	-	-	-	6.6 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1369	-	-	-	612 847
Stage 1	-	-	-	-	839 -
Stage 2	-	-	-	-	837 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1369	-	-	-	606 847
Mov Cap-2 Maneuver	-	-	-	-	606 -
Stage 1	-	-	-	-	831 -
Stage 2	-	-	-	-	837 -

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1369	-	-	-	643
HCM Lane V/C Ratio	0.008	-	-	-	0.087
HCM Control Delay (s)	7.7	0	-	-	11.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	30	25	5	35	5	30	30	10	5	25	5
Future Vol, veh/h	5	30	25	5	35	5	30	30	10	5	25	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	33	27	5	38	5	33	33	11	5	27	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	43	0	0	60	0	0	124	110	47	130	121	41
Stage 1	-	-	-	-	-	-	57	57	-	51	51	-
Stage 2	-	-	-	-	-	-	67	53	-	79	70	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1579	-	-	1556	-	-	855	784	1028	847	773	1036
Stage 1	-	-	-	-	-	-	960	851	-	967	856	-
Stage 2	-	-	-	-	-	-	948	855	-	935	841	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1579	-	-	1556	-	-	823	779	1028	807	768	1036
Mov Cap-2 Maneuver	-	-	-	-	-	-	823	779	-	807	768	-
Stage 1	-	-	-	-	-	-	957	848	-	964	853	-
Stage 2	-	-	-	-	-	-	910	852	-	886	838	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			0.8			9.8			9.7		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	827	1579	-	-	1556	-	-	803
HCM Lane V/C Ratio	0.093	0.003	-	-	0.004	-	-	0.048
HCM Control Delay (s)	9.8	7.3	0	-	7.3	0	-	9.7
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.2

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	35	45	5	35	10	65	25	5	5	25	5
Future Vol, veh/h	5	35	45	5	35	10	65	25	5	5	25	5
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
Heavy Vehicles, %	0	4	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	38	49	5	38	11	71	27	5	5	27	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.5	8	7.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	68%	6%	10%	14%
Vol Thru, %	26%	41%	70%	71%
Vol Right, %	5%	53%	20%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	95	85	50	35
LT Vol	65	5	5	5
Through Vol	25	35	35	25
RT Vol	5	45	10	5
Lane Flow Rate	104	93	55	38
Geometry Grp	1	1	1	1
Degree of Util (X)	0.124	0.101	0.063	0.045
Departure Headway (Hd)	4.292	3.884	4.12	4.182
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	827	906	854	843
Service Time	2.364	1.978	2.219	2.273
HCM Lane V/C Ratio	0.126	0.103	0.064	0.045
HCM Control Delay	8	7.4	7.5	7.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.3	0.2	0.1

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	10	140	135	15	100	5	55	25	15	20	55	15
Future Vol, veh/h	10	140	135	15	100	5	55	25	15	20	55	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	2	0	0	0	0	0	0	0	0	0
Mvmt Flow	11	154	148	16	110	5	60	27	16	22	60	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	115	0	0	302	0	0	433	397	228	417	469	113
Stage 1	-	-	-	-	-	-	250	250	-	145	145	-
Stage 2	-	-	-	-	-	-	183	147	-	272	324	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1487	-	-	1270	-	-	537	544	816	550	495	945
Stage 1	-	-	-	-	-	-	759	704	-	863	781	-
Stage 2	-	-	-	-	-	-	823	779	-	738	653	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1487	-	-	1270	-	-	470	533	816	510	485	945
Mov Cap-2 Maneuver	-	-	-	-	-	-	470	533	-	510	485	-
Stage 1	-	-	-	-	-	-	754	699	-	857	771	-
Stage 2	-	-	-	-	-	-	736	769	-	690	648	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1	13.6	13.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	521	1487	-	-	1270	-	-	534
HCM Lane V/C Ratio	0.2	0.007	-	-	0.013	-	-	0.185
HCM Control Delay (s)	13.6	7.4	-	-	7.9	-	-	13.3
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0.7

HCM Signalized Intersection Capacity Analysis
720: Willow Ln & Redwood Ave

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	245	15	20	415	95	50	65	75	90	5	5
Future Volume (vph)	5	245	15	20	415	95	50	65	75	90	5	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.97			0.95			0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.96	
Satd. Flow (prot)	1662	1719		1583	1698			1608			1664	
Flt Permitted	0.33	1.00		0.57	1.00			0.89			0.61	
Satd. Flow (perm)	573	1719		955	1698			1454			1064	
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)	5	263	16	22	446	102	54	70	81	97	5	5
RTOR Reduction (vph)	0	3	0	0	9	0	0	23	0	0	2	0
Lane Group Flow (vph)	5	276	0	22	539	0	0	182	0	0	105	0
Heavy Vehicles (%)	0%	1%	0%	5%	0%	1%	0%	5%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			8			4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	24.4	24.0		23.9	23.5			11.8			11.8	
Effective Green, g (s)	25.4	25.0		24.9	25.0			12.3			12.3	
Actuated g/C Ratio	0.51	0.50		0.50	0.50			0.25			0.25	
Clearance Time (s)	4.5	5.0		4.5	5.5			4.5			4.5	
Vehicle Extension (s)	2.5	4.5		2.5	4.5			2.5			2.5	
Lane Grp Cap (vph)	309	856		484	845			356			260	
v/s Ratio Prot	0.00	0.16		c0.00	c0.32							
v/s Ratio Perm	0.01			0.02				c0.12			0.10	
v/c Ratio	0.02	0.32		0.05	0.64			0.51			0.41	
Uniform Delay, d1	6.6	7.5		6.5	9.3			16.4			15.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.4		0.0	2.0			0.9			0.8	
Delay (s)	6.7	7.9		6.5	11.3			17.3			16.6	
Level of Service	A	A		A	B			B			B	
Approach Delay (s)		7.9			11.1			17.3			16.6	
Approach LOS		A			B			B			B	

Intersection Summary

HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	50.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
730: Dowell Rd & Redwood Ave

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	500	105	65	580	125	155	55	95	80	70	10
Future Volume (vph)	10	500	105	65	580	125	155	55	95	80	70	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.90		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1705		1662	1690		1646	1583		1630	1718	
Flt Permitted	0.21	1.00		0.22	1.00		0.50	1.00		0.66	1.00	
Satd. Flow (perm)	372	1705		385	1690		859	1583		1129	1718	
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)	10	521	109	68	604	130	161	57	99	83	73	10
RTOR Reduction (vph)	0	7	0	0	6	0	0	56	0	0	4	0
Lane Group Flow (vph)	10	623	0	68	728	0	161	100	0	83	79	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	1%	0%	0%	2%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	37.3	36.7		43.5	39.8		20.3	12.2		13.1	8.6	
Effective Green, g (s)	37.3	37.7		43.5	40.8		20.3	13.2		13.1	9.6	
Actuated g/C Ratio	0.50	0.50		0.58	0.54		0.27	0.18		0.17	0.13	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.5	4.2		2.5	4.2		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	195	855		285	918		317	278		226	219	
v/s Ratio Prot	0.00	0.37		c0.01	c0.43		c0.05	0.06		0.02	0.05	
v/s Ratio Perm	0.03			0.13			c0.08			0.04		
v/c Ratio	0.05	0.73		0.24	0.79		0.51	0.36		0.37	0.36	
Uniform Delay, d1	11.4	14.7		9.6	13.8		22.3	27.2		27.0	29.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	3.4		0.3	5.1		0.9	0.6		0.7	0.7	
Delay (s)	11.5	18.1		10.0	18.9		23.2	27.8		27.7	30.7	
Level of Service	B	B		A	B		C	C		C	C	
Approach Delay (s)		18.0			18.1			25.5			29.2	
Approach LOS		B			B			C			C	

Intersection Summary

HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	75.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
740: Allen Creek Rd & Redwood Ave

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (vph)	5	595	140	15	960	5	5	5	45	5	5	5
Future Volume (vph)	5	595	140	15	960	5	5	5	45	5	5	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	0.86		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1700		1662	1749		1662	1512		1662	1619	
Flt Permitted	0.14	1.00		0.27	1.00		0.75	1.00		0.72	1.00	
Satd. Flow (perm)	252	1700		470	1749		1314	1512		1263	1619	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	647	152	16	1043	5	5	5	49	5	5	5
RTOR Reduction (vph)	0	5	0	0	0	0	0	45	0	0	5	0
Lane Group Flow (vph)	5	794	0	16	1048	0	5	9	0	5	5	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	68.6	67.8		68.6	67.8		7.7	6.9		7.7	6.9	
Effective Green, g (s)	70.6	68.8		70.6	68.8		9.7	7.9		9.7	7.9	
Actuated g/C Ratio	0.73	0.71		0.73	0.71		0.10	0.08		0.10	0.08	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	4.2		2.0	4.2		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	211	1214		366	1249		138	124		134	132	
v/s Ratio Prot	0.00	0.47		c0.00	c0.60		0.00	c0.01		c0.00	0.00	
v/s Ratio Perm	0.02			0.03			0.00			0.00		
v/c Ratio	0.02	0.65		0.04	0.84		0.04	0.07		0.04	0.04	
Uniform Delay, d1	9.6	7.4		5.2	9.8		39.1	40.8		39.1	40.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.5		0.0	5.4		0.0	0.1		0.0	0.0	
Delay (s)	9.6	8.8		5.2	15.2		39.1	40.9		39.1	40.8	
Level of Service	A	A		A	B		D	D		D	D	
Approach Delay (s)		8.8			15.1			40.8			40.2	
Approach LOS		A			B			D			D	

Intersection Summary

HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	96.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	5	5	30	5	5	5	75	20	5	175	5
Future Vol, veh/h	5	5	5	30	5	5	5	75	20	5	175	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	6	6	35	6	6	6	87	23	6	203	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	335	340	206	335	332	99	209	0	0	110	0	0
Stage 1	218	218	-	111	111	-	-	-	-	-	-	-
Stage 2	117	122	-	224	221	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	622	585	840	622	591	962	1374	-	-	1493	-	-
Stage 1	789	726	-	899	807	-	-	-	-	-	-	-
Stage 2	892	799	-	783	724	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	609	579	840	608	585	962	1374	-	-	1493	-	-
Mov Cap-2 Maneuver	609	579	-	608	585	-	-	-	-	-	-	-
Stage 1	785	722	-	895	803	-	-	-	-	-	-	-
Stage 2	876	795	-	767	720	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.6		11.1		0.4		0.2	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1374	-	-	658	634	1493	-
HCM Lane V/C Ratio	0.004	-	-	0.027	0.073	0.004	-
HCM Control Delay (s)	7.6	0	-	10.6	11.1	7.4	0
HCM Lane LOS	A	A	-	B	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶						↷			↶	↷
Traffic Vol, veh/h	0	240	5	0	0	0	15	0	10	5	25	295
Future Vol, veh/h	0	240	5	0	0	0	15	0	10	5	25	295
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	16983	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	286	6	0	0	0	18	0	12	6	30	351

Major/Minor	Major1			Minor1			Major2					
Conflicting Flow All	-	0	0				331	331	289	292	0	0
Stage 1	-	-	-				289	289	-	-	-	-
Stage 2	-	-	-				42	42	-	-	-	-
Critical Hdwy	-	-	-				6.4	6.5	6.2	4.1	-	-
Critical Hdwy Stg 1	-	-	-				5.4	5.5	-	-	-	-
Critical Hdwy Stg 2	-	-	-				5.4	5.5	-	-	-	-
Follow-up Hdwy	-	-	-				3.5	4	3.3	2.2	-	-
Pot Cap-1 Maneuver	0	-	-				668	592	755	1281	-	0
Stage 1	0	-	-				765	677	-	-	-	0
Stage 2	0	-	-				986	864	-	-	-	0
Platoon blocked, %		-	-									-
Mov Cap-1 Maneuver	-	-	-				665	0	755	1281	-	-
Mov Cap-2 Maneuver	-	-	-				665	0	-	-	-	-
Stage 1	-	-	-				761	0	-	-	-	-
Stage 2	-	-	-				986	0	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	10.4	1.3
HCM LOS		B	

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	SBL	SBT
Capacity (veh/h)	698	-	-	1281	-
HCM Lane V/C Ratio	0.043	-	-	0.005	-
HCM Control Delay (s)	10.4	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection												
Int Delay, s/veh	5.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Traffic Vol, veh/h	5	5	5	20	5	190	5	205	10	180	170	5
Future Vol, veh/h	5	5	5	20	5	190	5	205	10	180	170	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	135	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	5	5	5	21	5	202	5	218	11	191	181	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	903	805	184	805	802	224	186	0	0	229	0	0
Stage 1	566	566	-	234	234	-	-	-	-	-	-	-
Stage 2	337	239	-	571	568	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	260	318	864	303	320	820	1401	-	-	1351	-	-
Stage 1	513	511	-	774	715	-	-	-	-	-	-	-
Stage 2	681	711	-	509	510	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	169	267	864	260	268	820	1401	-	-	1351	-	-
Mov Cap-2 Maneuver	169	267	-	260	268	-	-	-	-	-	-	-
Stage 1	511	430	-	771	712	-	-	-	-	-	-	-
Stage 2	507	708	-	421	429	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB			
HCM Control Delay, s	18.8		11.9		0.2		4.1			
HCM LOS	C		B							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1401	-	-	277	262	820	1351	-	-
HCM Lane V/C Ratio	0.004	-	-	0.058	0.102	0.246	0.142	-	-
HCM Control Delay (s)	7.6	0	-	18.8	20.3	10.8	8.1	0	-
HCM Lane LOS	A	A	-	C	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	1	0.5	-	-

HCM Signalized Intersection Capacity Analysis
780: Allen Creek Rd & Albertsons

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	400	5	65	5	5	5	105	245	5	25	5	280
Future Volume (vph)	400	5	65	5	5	5	105	245	5	25	5	280
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	1.00			1.00	0.95
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00			1.00	0.98
Flt Protected	0.95	0.95	1.00	0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1579	1585	1488	1662	1619		1662	1744			1662	3256
Flt Permitted	0.75	0.72	1.00	0.61	1.00		0.54	1.00			0.59	1.00
Satd. Flow (perm)	1246	1203	1488	1071	1619		938	1744			1030	3256
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)	444	6	72	6	6	6	117	272	6	28	6	311
RTOR Reduction (vph)	0	0	49	0	4	0	0	2	0	0	0	26
Lane Group Flow (vph)	226	224	23	6	8	0	117	276	0	0	34	335
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	Perm	NA
Protected Phases		8			4			6				2
Permitted Phases	8		8	4			6			2	2	
Actuated Green, G (s)	9.3	9.3	9.3	9.3	9.3		12.3	12.3			12.3	12.3
Effective Green, g (s)	9.3	9.3	9.3	9.3	9.3		12.3	12.3			12.3	12.3
Actuated g/C Ratio	0.31	0.31	0.31	0.31	0.31		0.42	0.42			0.42	0.42
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5			2.5	2.5
Lane Grp Cap (vph)	391	377	467	336	508		389	724			428	1353
v/s Ratio Prot					0.00			c0.16				0.10
v/s Ratio Perm	0.18	c0.19	0.02	0.01			0.12				0.03	
v/c Ratio	0.58	0.59	0.05	0.02	0.02		0.30	0.38			0.08	0.25
Uniform Delay, d1	8.5	8.6	7.1	7.0	7.0		5.8	6.0			5.2	5.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	1.7	2.1	0.0	0.0	0.0		0.3	0.2			0.1	0.1
Delay (s)	10.2	10.7	7.1	7.0	7.0		6.1	6.3			5.3	5.7
Level of Service	B	B	A	A	A		A	A			A	A
Approach Delay (s)		10.0			7.0			6.2				5.7
Approach LOS		A			A			A				A

Intersection Summary

HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	29.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBR
Lane Configurations	
Traffic Volume (vph)	45
Future Volume (vph)	45
Ideal Flow (vphpl)	1750
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.90
Adj. Flow (vph)	50
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Intersection						
Int Delay, s/veh	6.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	85	105	100	180	205	50
Future Vol, veh/h	85	105	100	180	205	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	93	115	110	198	225	55

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	308	0	-	0	510 209
Stage 1	-	-	-	-	209 -
Stage 2	-	-	-	-	301 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1264	-	-	-	527 836
Stage 1	-	-	-	-	831 -
Stage 2	-	-	-	-	755 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1264	-	-	-	488 836
Mov Cap-2 Maneuver	-	-	-	-	544 -
Stage 1	-	-	-	-	770 -
Stage 2	-	-	-	-	755 -

Approach	EB	WB	SB
HCM Control Delay, s	3.6	0	16.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1264	-	-	-	584
HCM Lane V/C Ratio	0.074	-	-	-	0.48
HCM Control Delay (s)	8.1	-	-	-	16.7
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	2.6

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	15	40	410	325	35
Future Vol, veh/h	30	15	40	410	325	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	80	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	4	1	2	0
Mvmt Flow	35	18	47	482	382	41

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	979	212	423	0	-	0
Stage 1	403	-	-	-	-	-
Stage 2	576	-	-	-	-	-
Critical Hdwy	6.6	6.9	4.16	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.238	-	-	-
Pot Cap-1 Maneuver	265	800	1122	-	-	-
Stage 1	649	-	-	-	-	-
Stage 2	566	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	250	800	1122	-	-	-
Mov Cap-2 Maneuver	250	-	-	-	-	-
Stage 1	612	-	-	-	-	-
Stage 2	566	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.7	0.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1122	-	250	800	-	-
HCM Lane V/C Ratio	0.042	-	0.141	0.022	-	-
HCM Control Delay (s)	8.3	0	21.8	9.6	-	-
HCM Lane LOS	A	A	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	0.1	-	-

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	5	190	385	45	20	5
Future Vol, veh/h	5	190	385	45	20	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	110	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	204	414	48	22	5

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	462	0	-	0	652 438
Stage 1	-	-	-	-	438 -
Stage 2	-	-	-	-	214 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1099	-	-	-	433 619
Stage 1	-	-	-	-	651 -
Stage 2	-	-	-	-	822 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1099	-	-	-	431 619
Mov Cap-2 Maneuver	-	-	-	-	431 -
Stage 1	-	-	-	-	648 -
Stage 2	-	-	-	-	822 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1099	-	-	-	431	619
HCM Lane V/C Ratio	0.005	-	-	-	0.05	0.009
HCM Control Delay (s)	8.3	0	-	-	13.8	10.9
HCM Lane LOS	A	A	-	-	B	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0

Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	90	30	5	85	35	5
Future Vol, veh/h	90	30	5	85	35	5
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	110	37	6	104	43	6

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	148	0	246
Stage 1	-	-	-	-	130
Stage 2	-	-	-	-	116
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1446	-	747
Stage 1	-	-	-	-	901
Stage 2	-	-	-	-	914
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1445	-	743
Mov Cap-2 Maneuver	-	-	-	-	743
Stage 1	-	-	-	-	896
Stage 2	-	-	-	-	914

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	762	-	-	1445	-
HCM Lane V/C Ratio	0.064	-	-	0.004	-
HCM Control Delay (s)	10	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	40	35	5	40	5	40	40	5	5	40	25
Future Vol, veh/h	40	40	35	5	40	5	40	40	5	5	40	25
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
Heavy Vehicles, %	3	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	44	44	38	5	44	5	44	44	5	5	44	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.1	7.7	8	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	47%	35%	10%	7%
Vol Thru, %	47%	35%	80%	57%
Vol Right, %	6%	30%	10%	36%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	85	115	50	70
LT Vol	40	40	5	5
Through Vol	40	40	40	40
RT Vol	5	35	5	25
Lane Flow Rate	93	126	55	77
Geometry Grp	1	1	1	1
Degree of Util (X)	0.115	0.15	0.067	0.09
Departure Headway (Hd)	4.449	4.281	4.38	4.213
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	808	840	820	853
Service Time	2.462	2.295	2.394	2.225
HCM Lane V/C Ratio	0.115	0.15	0.067	0.09
HCM Control Delay	8	8.1	7.7	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.5	0.2	0.3

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	30	40	80	65	5
Future Vol, veh/h	10	30	40	80	65	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	11	34	45	90	73	6

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	256	76	79	0	0
Stage 1	76	-	-	-	-
Stage 2	180	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	737	991	1532	-	-
Stage 1	952	-	-	-	-
Stage 2	856	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	714	991	1532	-	-
Mov Cap-2 Maneuver	714	-	-	-	-
Stage 1	922	-	-	-	-
Stage 2	856	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	2.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1532	-	903	-	-
HCM Lane V/C Ratio	0.029	-	0.05	-	-
HCM Control Delay (s)	7.4	0	9.2	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	70	235	5	5	220	55	5	5	5	70	5	60
Future Vol, veh/h	70	235	5	5	220	55	5	5	5	70	5	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	74	250	5	5	234	59	5	5	5	74	5	64

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	293	0	0	255	0	0	709	704	253	680	677	264
Stage 1	-	-	-	-	-	-	401	401	-	274	274	-
Stage 2	-	-	-	-	-	-	308	303	-	406	403	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1280	-	-	1322	-	-	352	364	791	368	377	780
Stage 1	-	-	-	-	-	-	630	604	-	736	687	-
Stage 2	-	-	-	-	-	-	706	667	-	626	603	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1280	-	-	1322	-	-	302	338	791	342	350	780
Mov Cap-2 Maneuver	-	-	-	-	-	-	302	338	-	342	350	-
Stage 1	-	-	-	-	-	-	588	564	-	687	684	-
Stage 2	-	-	-	-	-	-	640	664	-	575	563	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	0.1	14.4	16.5
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	398	1280	-	-	1322	-	-	456
HCM Lane V/C Ratio	0.04	0.058	-	-	0.004	-	-	0.315
HCM Control Delay (s)	14.4	8	0	-	7.7	0	-	16.5
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	1.3

Intersection												
Int Delay, s/veh	10.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	130	155	5	145	20	135	130	20	10	105	10
Future Vol, veh/h	20	130	155	5	145	20	135	130	20	10	105	10
Conflicting Peds, #/hr	12	0	4	4	0	12	5	0	0	0	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	20	131	157	5	146	20	136	131	20	10	106	10

















Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	178	0	0	292	0	0	483	442	214	503	510	173
Stage 1	-	-	-	-	-	-	254	254	-	178	178	-
Stage 2	-	-	-	-	-	-	229	188	-	325	332	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1410	-	-	1281	-	-	497	513	831	482	469	876
Stage 1	-	-	-	-	-	-	755	701	-	828	756	-
Stage 2	-	-	-	-	-	-	778	748	-	692	648	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1394	-	-	1276	-	-	393	495	828	364	452	862
Mov Cap-2 Maneuver	-	-	-	-	-	-	393	495	-	364	452	-
Stage 1	-	-	-	-	-	-	739	686	-	805	745	-
Stage 2	-	-	-	-	-	-	654	737	-	537	634	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.2			25.9			15.7		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	452	1394	-	-	1276	-	-	461
HCM Lane V/C Ratio	0.637	0.014	-	-	0.004	-	-	0.274
HCM Control Delay (s)	25.9	7.6	0	-	7.8	0	-	15.7
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	4.3	0	-	-	0	-	-	1.1

HCM Signalized Intersection Capacity Analysis
880: Mill St & E St

No Build 2040 PM Peak
12/10/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	60	855	15	70	55	0	0	40	45
Future Volume (vph)	0	0	0	60	855	15	70	55	0	0	40	45
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
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				0.93
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					3306		1662	1750				1625
Flt Permitted					1.00		0.70	1.00				1.00
Satd. Flow (perm)					3306		1222	1750				1625
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	0	0	65	919	16	75	59	0	0	43	48
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	39	0
Lane Group Flow (vph)	0	0	0	0	999	0	75	59	0	0	52	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Perm	NA		Perm	NA				NA
Protected Phases					6			8				4
Permitted Phases				6			8					
Actuated Green, G (s)					21.0		6.2	6.2				6.2
Effective Green, g (s)					22.0		7.2	7.2				7.2
Actuated g/C Ratio					0.59		0.19	0.19				0.19
Clearance Time (s)					5.0		5.0	5.0				5.0
Vehicle Extension (s)					4.1		2.5	2.5				2.5
Lane Grp Cap (vph)					1955		236	338				314
v/s Ratio Prot								0.03				0.03
v/s Ratio Perm					0.30		c0.06					
v/c Ratio					0.51		0.32	0.17				0.17
Uniform Delay, d1					4.4		12.9	12.5				12.5
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					0.3		0.6	0.2				0.2
Delay (s)					4.8		13.5	12.7				12.7
Level of Service					A		B	B				B
Approach Delay (s)		0.0			4.8			13.1				12.7
Approach LOS		A			A			B				B
Intersection Summary												
HCM 2000 Control Delay			6.3		HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			37.2		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												

HCM Signalized Intersection Capacity Analysis
890: Mill St & F St

No Build 2040 PM Peak
12/10/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕↕						↔		↕	↕		
Traffic Volume (vph)	70	715	65	0	0	0	0	65	45	10	90	0	
Future Volume (vph)	70	715	65	0	0	0	0	65	45	10	90	0	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Total Lost time (s)		4.0						4.0		4.0	4.0		
Lane Util. Factor		0.95						1.00		1.00	1.00		
Frt		0.99						0.95		1.00	1.00		
Flt Protected		1.00						1.00		0.95	1.00		
Satd. Flow (prot)		3251						1625		1662	1750		
Flt Permitted		1.00						1.00		0.67	1.00		
Satd. Flow (perm)		3251						1625		1181	1750		
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	
Adj. Flow (vph)	81	831	76	0	0	0	0	76	52	12	105	0	
RTOR Reduction (vph)	0	7	0	0	0	0	0	34	0	0	0	0	
Lane Group Flow (vph)	0	981	0	0	0	0	0	94	0	12	105	0	
Heavy Vehicles (%)	0%	0%	9%	0%	0%	0%	0%	3%	0%	0%	0%	0%	
Turn Type	Perm	NA						NA		Perm	NA		
Protected Phases		2						8			4		
Permitted Phases	2									4			
Actuated Green, G (s)		20.4						6.2		6.2	6.2		
Effective Green, g (s)		21.4						7.2		7.2	7.2		
Actuated g/C Ratio		0.58						0.20		0.20	0.20		
Clearance Time (s)		5.0						5.0		5.0	5.0		
Vehicle Extension (s)		4.1						2.5		2.5	2.5		
Lane Grp Cap (vph)		1900						319		232	344		
v/s Ratio Prot								0.06			c0.06		
v/s Ratio Perm		0.30								0.01			
v/c Ratio		0.52						0.30		0.05	0.31		
Uniform Delay, d1		4.5						12.5		11.9	12.6		
Progression Factor		1.00						1.00		1.00	1.00		
Incremental Delay, d2		0.3						0.4		0.1	0.4		
Delay (s)		4.9						12.9		12.0	12.9		
Level of Service		A						B		B	B		
Approach Delay (s)		4.9			0.0			12.9			12.8		
Approach LOS		A			A			B			B		
Intersection Summary													
HCM 2000 Control Delay			6.4									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.46										
Actuated Cycle Length (s)			36.6									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													

HCM Signalized Intersection Capacity Analysis
 900: Fire Mountain Wy & E St

No Build 2040 PM Peak
 12/10/2018





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	545	20	15	755	160	55	30	85	155	20	155
Future Volume (vph)	125	545	20	15	755	160	55	30	85	155	20	155
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.89		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3295		1662	3211		1583	1555		1662	1518	
Flt Permitted	0.95	1.00		0.95	1.00		0.57	1.00		0.68	1.00	
Satd. Flow (perm)	1662	3295		1662	3211		957	1555		1190	1518	
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)	130	568	21	16	786	167	57	31	89	161	21	161
RTOR Reduction (vph)	0	3	0	0	18	0	0	68	0	0	123	0
Lane Group Flow (vph)	130	586	0	16	935	0	57	52	0	161	59	0
Heavy Vehicles (%)	0%	0%	10%	0%	1%	0%	5%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases							8			4		
Actuated Green, G (s)	8.2	36.8		0.7	29.3		15.2	15.2		15.2	15.2	
Effective Green, g (s)	8.2	36.8		0.7	29.3		15.2	15.2		15.2	15.2	
Actuated g/C Ratio	0.13	0.56		0.01	0.45		0.23	0.23		0.23	0.23	
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	2.5	4.6		2.5	4.6		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	209	1859		17	1442		223	362		277	353	
v/s Ratio Prot	c0.08	0.18		0.01	c0.29			0.03			0.04	
v/s Ratio Perm							0.06			c0.14		
v/c Ratio	0.62	0.32		0.94	0.65		0.26	0.14		0.58	0.17	
Uniform Delay, d1	27.0	7.5		32.2	13.9		20.4	19.8		22.2	19.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.9	0.2		188.5	1.3		0.4	0.1		2.6	0.2	
Delay (s)	31.9	7.7		220.8	15.2		20.8	20.0		24.7	20.1	
Level of Service	C	A		F	B		C	B		C	C	
Approach Delay (s)		12.1			18.6			20.2			22.3	
Approach LOS		B			B			C			C	

Intersection Summary

HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	65.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
910: M St & Mill St

No Build 2040 PM Peak
12/10/2018

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	20	440	5	5	450	50	5	5	5	130	5	45	
Future Volume (vph)	20	440	5	5	450	50	5	5	5	130	5	45	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Total Lost time (s)	4.0	4.0			4.0			4.0		4.0	4.0		
Lane Util. Factor	1.00	1.00			1.00			1.00		1.00	1.00		
Frt	1.00	1.00			0.99			0.95		1.00	0.86		
Flt Protected	0.95	1.00			1.00			0.98		0.95	1.00		
Satd. Flow (prot)	1554	1747			1702			1612		1614	1509		
Flt Permitted	0.48	1.00			1.00			0.92		0.75	1.00		
Satd. Flow (perm)	785	1747			1696			1504		1270	1509		
Peak-hour factor, PHF	0.93	0.93	0.92	0.92	0.93	0.93	0.92	0.92	0.92	0.93	0.92	0.93	
Adj. Flow (vph)	22	473	5	5	484	54	5	5	5	140	5	48	
RTOR Reduction (vph)	0	0	0	0	5	0	0	4	0	0	38	0	
Lane Group Flow (vph)	22	478	0	0	538	0	0	11	0	140	15	0	
Heavy Vehicles (%)	7%	0%	2%	2%	0%	14%	2%	2%	2%	3%	2%	0%	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		6			2			8			4		
Permitted Phases	6			2			8			4			
Actuated Green, G (s)	22.8	22.8			22.8			8.1		8.1	8.1		
Effective Green, g (s)	23.8	23.8			23.8			8.1		8.1	8.1		
Actuated g/C Ratio	0.60	0.60			0.60			0.20		0.20	0.20		
Clearance Time (s)	5.0	5.0			5.0			4.0		4.0	4.0		
Vehicle Extension (s)	4.1	4.1			4.1			2.5		2.5	2.5		
Lane Grp Cap (vph)	468	1042			1011			305		257	306		
v/s Ratio Prot		0.27									0.01		
v/s Ratio Perm	0.03				0.32			0.01		0.11			
v/c Ratio	0.05	0.46			0.53			0.04		0.54	0.05		
Uniform Delay, d1	3.3	4.5			4.8			12.8		14.2	12.8		
Progression Factor	1.00	1.00			1.00			1.00		1.00	1.00		
Incremental Delay, d2	0.1	0.5			0.7			0.0		1.9	0.0		
Delay (s)	3.4	4.9			5.5			12.8		16.1	12.8		
Level of Service	A	A			A			B		B	B		
Approach Delay (s)		4.9			5.5			12.8			15.2		
Approach LOS		A			A			B			B		
Intersection Summary													
HCM 2000 Control Delay			6.8									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.53										
Actuated Cycle Length (s)			39.9									Sum of lost time (s)	8.0
Intersection Capacity Utilization			54.5%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	440	125	5	560	5	45	5	5	5	5	5
Future Vol, veh/h	5	440	125	5	560	5	45	5	5	5	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	67	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	5	478	136	5	609	5	49	5	5	5	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	614	0	0	614	0	0	1183	1180	546	1183	1246	612
Stage 1	-	-	-	-	-	-	556	556	-	622	622	-
Stage 2	-	-	-	-	-	-	627	624	-	561	624	-
Critical Hdwy	4.77	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.803	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	716	-	-	975	-	-	168	192	541	168	175	497
Stage 1	-	-	-	-	-	-	519	516	-	478	482	-
Stage 2	-	-	-	-	-	-	475	481	-	516	481	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	716	-	-	975	-	-	160	188	541	160	172	497
Mov Cap-2 Maneuver	-	-	-	-	-	-	160	188	-	160	172	-
Stage 1	-	-	-	-	-	-	513	510	-	473	478	-
Stage 2	-	-	-	-	-	-	461	477	-	500	476	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.1			36.4			23.3		
HCM LOS							E			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	173	716	-	-	975	-	-	213
HCM Lane V/C Ratio	0.346	0.008	-	-	0.006	-	-	0.077
HCM Control Delay (s)	36.4	10.1	0	-	8.7	0	-	23.3
HCM Lane LOS	E	B	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.4	0	-	-	0	-	-	0.2

Intersection	
Intersection Delay, s/veh	34
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↘		↗	↘		↗	↘	
Traffic Vol, veh/h	40	75	145	95	85	90	140	295	115	110	235	35
Future Vol, veh/h	40	75	145	95	85	90	140	295	115	110	235	35
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
Heavy Vehicles, %	2	0	1	0	3	0	1	2	0	3	2	3
Mvmt Flow	44	82	159	104	93	99	154	324	126	121	258	38
Number of Lanes	0	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	1
HCM Control Delay	27.6	17.3	52.3	23.8
HCM LOS	D	C	F	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	15%	100%	0%	100%	0%
Vol Thru, %	0%	72%	29%	0%	49%	0%	87%
Vol Right, %	0%	28%	56%	0%	51%	0%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	140	410	260	95	175	110	270
LT Vol	140	0	40	95	0	110	0
Through Vol	0	295	75	0	85	0	235
RT Vol	0	115	145	0	90	0	35
Lane Flow Rate	154	451	286	104	192	121	297
Geometry Grp	7	7	6	7	7	7	7
Degree of Util (X)	0.364	0.978	0.675	0.271	0.454	0.299	0.683
Departure Headway (Hd)	8.515	7.811	8.511	9.331	8.49	8.914	8.282
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	423	464	426	385	423	403	436
Service Time	6.268	5.564	6.569	7.089	6.248	6.671	6.039
HCM Lane V/C Ratio	0.364	0.972	0.671	0.27	0.454	0.3	0.681
HCM Control Delay	16.1	64.7	27.6	15.5	18.2	15.5	27.2
HCM Lane LOS	C	F	D	C	C	C	D
HCM 95th-tile Q	1.6	12.3	4.9	1.1	2.3	1.2	5

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	260	30	5	210	25	5
Future Vol, veh/h	260	30	5	210	25	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	0	100	0	0	0
Mvmt Flow	299	34	6	241	29	6

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	333	0	569 316
Stage 1	-	-	-	-	316 -
Stage 2	-	-	-	-	253 -
Critical Hdwy	-	-	5.1	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	3.1	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	833	-	487 729
Stage 1	-	-	-	-	744 -
Stage 2	-	-	-	-	794 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	833	-	483 729
Mov Cap-2 Maneuver	-	-	-	-	483 -
Stage 1	-	-	-	-	738 -
Stage 2	-	-	-	-	794 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	512	-	-	833	-
HCM Lane V/C Ratio	0.067	-	-	0.007	-
HCM Control Delay (s)	12.5	-	-	9.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	35	435	25	55	470
Future Vol, veh/h	25	35	435	25	55	470
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	92
Heavy Vehicles, %	0	0	2	0	3	1
Mvmt Flow	28	39	483	28	61	511

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1130	497	0	0	511
Stage 1	497	-	-	-	-
Stage 2	633	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.13
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.227
Pot Cap-1 Maneuver	227	577	-	-	1049
Stage 1	615	-	-	-	-
Stage 2	533	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	214	577	-	-	1049
Mov Cap-2 Maneuver	214	-	-	-	-
Stage 1	579	-	-	-	-
Stage 2	533	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.2	0	0.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	338	1049
HCM Lane V/C Ratio	-	-	0.197	0.058
HCM Control Delay (s)	-	-	18.2	8.6
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.7	0.2

Intersection												
Int Delay, s/veh	8.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	20	15	10	100	25	90	5	10	60	170	20	20
Future Vol, veh/h	20	15	10	100	25	90	5	10	60	170	20	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	35	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	22	16	11	109	27	98	5	11	65	185	22	22

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	519	489	33	471	468	44	44	0	0	76	0	0
Stage 1	403	403	-	54	54	-	-	-	-	-	-	-
Stage 2	116	86	-	417	414	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	471	482	1046	506	496	1032	1577	-	-	1536	-	-
Stage 1	628	603	-	963	854	-	-	-	-	-	-	-
Stage 2	894	827	-	617	597	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	368	423	1046	440	435	1032	1577	-	-	1536	-	-
Mov Cap-2 Maneuver	368	423	-	440	435	-	-	-	-	-	-	-
Stage 1	626	531	-	960	851	-	-	-	-	-	-	-
Stage 2	781	825	-	521	525	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.9		13.5		0.5		6.2	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1577	-	-	453	439	1032	1536	-	-
HCM Lane V/C Ratio	0.003	-	-	0.108	0.309	0.095	0.12	-	-
HCM Control Delay (s)	7.3	-	-	13.9	16.8	8.9	7.7	-	-
HCM Lane LOS	A	-	-	B	C	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	1.3	0.3	0.4	-	-

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	15	385	275	15	60	5
Future Vol, veh/h	15	385	275	15	60	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	16	410	293	16	64	5

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	309	0	-	0	743
Stage 1	-	-	-	-	301
Stage 2	-	-	-	-	442
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1263	-	-	-	386
Stage 1	-	-	-	-	755
Stage 2	-	-	-	-	652
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1263	-	-	-	380
Mov Cap-2 Maneuver	-	-	-	-	380
Stage 1	-	-	-	-	743
Stage 2	-	-	-	-	652

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	16
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1263	-	-	-	395
HCM Lane V/C Ratio	0.013	-	-	-	0.175
HCM Control Delay (s)	7.9	0	-	-	16
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.6

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	280	165	45	150	140	55
Future Vol, veh/h	280	165	45	150	140	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	298	176	48	160	149	59

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	474	0	642	386
Stage 1	-	-	-	-	386	-
Stage 2	-	-	-	-	256	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1099	-	442	666
Stage 1	-	-	-	-	691	-
Stage 2	-	-	-	-	791	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1099	-	421	666
Mov Cap-2 Maneuver	-	-	-	-	421	-
Stage 1	-	-	-	-	658	-
Stage 2	-	-	-	-	791	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	18.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	470	-	-	1099	-
HCM Lane V/C Ratio	0.441	-	-	0.044	-
HCM Control Delay (s)	18.6	-	-	8.4	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2.2	-	-	0.1	-

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	20	135	90	45	70	45
Future Vol, veh/h	20	135	90	45	70	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	23	155	103	52	80	52

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	155	0	0	330	129
Stage 1	-	-	-	129	-
Stage 2	-	-	-	201	-
Critical Hdwy	4.1	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	3.5	3.3
Pot Cap-1 Maneuver	1438	-	-	669	926
Stage 1	-	-	-	902	-
Stage 2	-	-	-	838	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1438	-	-	657	926
Mov Cap-2 Maneuver	-	-	-	657	-
Stage 1	-	-	-	886	-
Stage 2	-	-	-	838	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1438	-	-	-	741
HCM Lane V/C Ratio	0.016	-	-	-	0.178
HCM Control Delay (s)	7.5	0	-	-	10.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.6

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1622	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1622	-	1021
Mov Cap-2 Maneuver	-	-	-	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1622	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	35	85	50	160	295	35
Future Vol, veh/h	35	85	50	160	295	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	43	104	61	195	360	43

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	699	382	403	0	0
Stage 1	382	-	-	-	-
Stage 2	317	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	409	670	1167	-	-
Stage 1	694	-	-	-	-
Stage 2	743	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	385	670	1167	-	-
Mov Cap-2 Maneuver	385	-	-	-	-
Stage 1	653	-	-	-	-
Stage 2	743	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.9	2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1167	-	551	-	-
HCM Lane V/C Ratio	0.052	-	0.266	-	-
HCM Control Delay (s)	8.3	0	13.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.1	-	-

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	15	5	170	5	5	210
Future Vol, veh/h	15	5	170	5	5	210
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	17	6	191	6	6	236

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	442	194	0	0	197
Stage 1	194	-	-	-	-
Stage 2	248	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	577	853	-	-	1388
Stage 1	844	-	-	-	-
Stage 2	798	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	574	853	-	-	1388
Mov Cap-2 Maneuver	574	-	-	-	-
Stage 1	840	-	-	-	-
Stage 2	798	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	625	1388
HCM Lane V/C Ratio	-	-	0.036	0.004
HCM Control Delay (s)	-	-	11	7.6
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0