

Appendix D

Intersection Level of Service Analysis

1. 2025 Existing Conditions: Weekday AM Peak-Hour LOS and Delays
2. 2025 Existing Conditions: Weekday PM Peak-Hour LOS and Delays
3. 2040 No Build Conditions: Weekday AM Peak-Hour LOS and Delays
4. 2040 No Build Conditions: Weekday PM Peak-Hour LOS and Delays
5. 2040 Build Conditions: Weekday AM Peak-Hour LOS and Delays
6. 2040 Build Conditions: Weekday PM Peak-Hour LOS and Delays
7. Traffic Signal Warrant Analysis

Part 1: 2025 Existing Conditions: Weekday AM Peak-Hour LOS and Delays

2: School St/Orne St & North St
Seth

2025 Existing AM
10/07/2025

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	5	530	10	15	740	50	60	85	20	120	75	35	
Future Volume (vph)	5	530	10	15	740	50	60	85	20	120	75	35	
Satd. Flow (prot)	1662	1525	0	1694	1543	0	0	1487	0	0	1688	0	
Flt Permitted	0.063			0.267				0.982			0.975		
Satd. Flow (perm)	110	1525	0	476	1543	0	0	1487	0	0	1688	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	5	556	0	16	858	0	0	201	0	0	307	0	
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA		
Protected Phases		4			8		2	2		6	6		9
Permitted Phases	4			8									
Total Split (s)	69.0	69.0		69.0	69.0		28.0	28.0		28.0	28.0		25.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0			6.0		
Act Effct Green (s)	63.6	63.6		63.6	63.6			21.3			22.2		
Actuated g/C Ratio	0.47	0.47		0.47	0.47			0.16			0.17		
v/c Ratio	0.10	0.77		0.07	1.18			0.85			1.10		
Control Delay (s/veh)	31.4	40.3		25.1	125.8			86.3			134.7		
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0		
Total Delay (s/veh)	31.4	40.3		25.1	125.8			86.3			134.7		
LOS	C	D		C	F			F			F		
Approach Delay (s/veh)		40.2			123.9			86.3			134.7		
Approach LOS		D			F			F			F		
Queue Length 50th (ft)	2	340		6	~789			157			~266		
Queue Length 95th (ft)	15	#711		27	#1341			#302			#431		
Internal Link Dist (ft)		541			1292			401			319		
Turn Bay Length (ft)	100			100									
Base Capacity (vph)	52	722		225	730			246			279		
Starvation Cap Reductn	0	0		0	0			0			0		
Spillback Cap Reductn	0	0		0	0			0			0		
Storage Cap Reductn	0	0		0	0			0			0		
Reduced v/c Ratio	0.10	0.77		0.07	1.18			0.82			1.10		

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 134.2

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.18

Intersection Signal Delay (s/veh): 97.6

Intersection LOS: F

Intersection Capacity Utilization 71.5%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: School St/Orne St & North St

Ø2	Ø6	Ø4	Ø9
28 s	28 s	69 s	25 s
		Ø8	
		69 s	

3: Mason St & North St
Seth

2025 Existing AM
10/07/2025

							Ø4	Ø9
Lane Group	SET	SER	NWL	NWT	NEL	NER	Ø4	Ø9
Lane Configurations								
Traffic Volume (vph)	715	30	295	740	0	175		
Future Volume (vph)	715	30	295	740	0	175		
Satd. Flow (prot)	1463	0	1413	1487	0	1286		
Flt Permitted			0.950					
Satd. Flow (perm)	1463	0	1413	1487	0	1236		
Satd. Flow (RTOR)								
Lane Group Flow (vph)	776	0	321	804	0	219		
Turn Type	NA		Prot	NA		pm+ov		
Protected Phases	6		5	2		5	4	9
Permitted Phases						4		
Total Split (s)	35.0		25.0	60.0		25.0	23.0	26.0
Total Lost Time (s)	4.0		5.0	4.0		5.0		
Act Effct Green (s)	32.0		20.6	60.6		20.6		
Actuated g/C Ratio	0.45		0.29	0.86		0.29		
v/c Ratio	1.17		0.78	0.63		0.58		
Control Delay (s/veh)	115.0		42.1	10.1		32.8		
Queue Delay	0.0		0.0	0.0		0.0		
Total Delay (s/veh)	115.0		42.1	10.1		32.8		
LOS	F		D	B		C		
Approach Delay (s/veh)	115.0			19.2	32.8			
Approach LOS	F			B	C			
Queue Length 50th (ft)	~280		98	0		62		
Queue Length 95th (ft)	#799		#338	#582		#167		
Internal Link Dist (ft)	1292			252	419			
Turn Bay Length (ft)								
Base Capacity (vph)	664		414	1279		376		
Starvation Cap Reductn	0		0	0		0		
Spillback Cap Reductn	0		0	0		0		
Storage Cap Reductn	0		0	0		0		
Reduced v/c Ratio	1.17		0.78	0.63		0.58		

Intersection Summary

Cycle Length: 109

Actuated Cycle Length: 70.4

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.17

Intersection Signal Delay (s/veh): 55.7

Intersection LOS: E

Intersection Capacity Utilization 83.3%

ICU Level of Service E

Analysis Period (min) 15

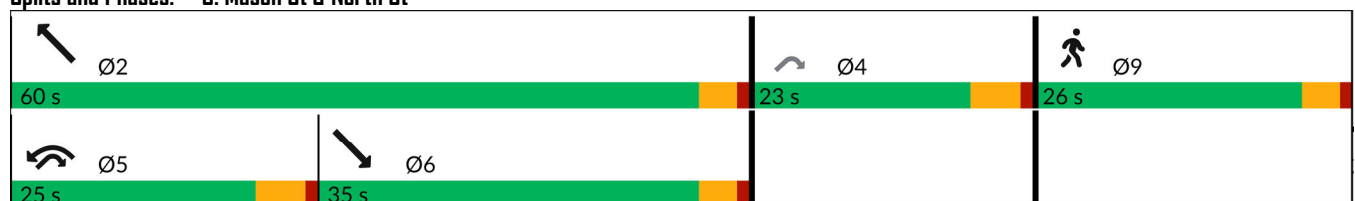
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Mason St & North St



													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	100	120	35	0	0	0	0	550	35	110	480	55	
Future Volume (vph)	100	120	35	0	0	0	0	550	35	110	480	55	
Satd. Flow (prot)	0	1365	1356	0	0	0	0	1382	0	1501	1356	0	
Flt Permitted		0.978								0.217			
Satd. Flow (perm)	0	1365	1270	0	0	0	0	1382	0	343	1356	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	0	242	38	0	0	0	0	597	0	111	541	0	
Turn Type	Split	NA	Perm					NA		pm+pt	NA		
Protected Phases	4	4						2		1	6		9
Permitted Phases			4							6			
Total Split (s)	25.0	25.0	25.0					50.0		20.0	70.0		35.0
Total Lost Time (s)		5.0	5.0					5.0		4.0	5.0		
Act Effct Green (s)		20.0	20.0					62.1		77.8	76.8		
Actuated g/C Ratio		0.15	0.15					0.48		0.60	0.59		
v/c Ratio		1.15	0.19					0.91		0.37	0.68		
Control Delay (s/veh)		157.5	51.0					53.1		20.1	24.2		
Queue Delay		0.0	0.0					1.5		0.0	0.0		
Total Delay (s/veh)		157.5	51.0					54.6		20.1	24.2		
LOS		F	D					D		C	C		
Approach Delay (s/veh)		143.0						54.6			23.5		
Approach LOS		F						D			C		
Queue Length 50th (ft)		~240	28					490		23	143		
Queue Length 95th (ft)		#410	63					#798		m54	314		
Internal Link Dist (ft)		473			358			431			307		
Turn Bay Length (ft)			75										
Base Capacity (vph)		210	195					659		347	801		
Starvation Cap Reductn		0	0					0		0	0		
Spillback Cap Reductn		0	0					14		0	0		
Storage Cap Reductn		0	0					0		0	0		
Reduced v/c Ratio		1.15	0.19					0.93		0.32	0.68		

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.15

Intersection Signal Delay (s/veh): 57.5

Intersection LOS: E

Intersection Capacity Utilization 73.2%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

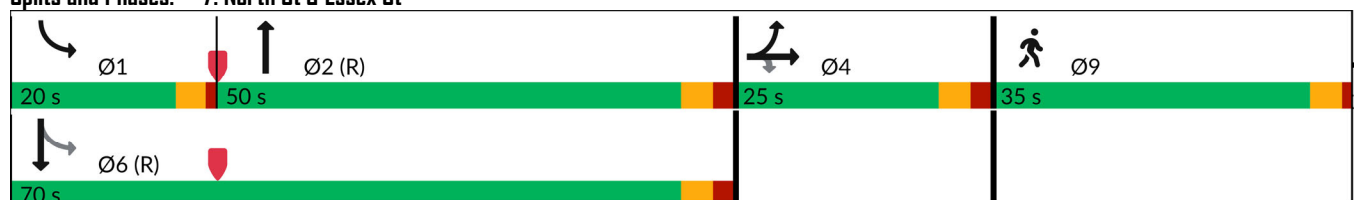
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: North St & Essex St



9: Washington St & Norman St/New Derby St
Seth

2025 Existing AM
10/07/2025

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	30	185	190	65	225	75	250	600	165	65	200	70	
Future Volume (vph)	30	185	190	65	225	75	250	600	165	65	200	70	
Satd. Flow (prot)	1662	1749	1487	1501	1504	0	1516	3031	1356	1678	1766	1501	
Flt Permitted	0.950			0.950			0.950			0.950			
Satd. Flow (perm)	1662	1749	1416	1501	1504	0	1516	3031	1269	1678	1766	1381	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	35	218	224	76	349	0	278	667	183	71	217	76	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	
Protected Phases	7	4		3	8		5	2		1	6		9
Permitted Phases			4						2			6	
Total Split (s)	20.0	35.0	35.0	20.0	35.0		30.0	45.0	45.0	20.0	35.0	35.0	30.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	
Act Effct Green (s)	8.7	29.9	29.9	11.4	32.4		25.3	40.7	40.7	10.9	22.3	22.3	
Actuated g/C Ratio	0.07	0.23	0.23	0.09	0.25		0.19	0.31	0.31	0.08	0.17	0.17	
v/c Ratio	0.32	0.55	0.70	0.59	0.95		0.96	0.71	0.47	0.52	0.73	0.33	
Control Delay (s/veh)	73.7	57.5	65.7	82.9	87.9		99.6	51.2	49.3	78.0	69.4	56.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	73.7	57.5	65.7	82.9	87.9		99.6	51.2	49.3	78.0	69.4	56.3	
LOS	E	E	E	F	F		F	D	D	E	E	E	
Approach Delay (s/veh)		62.5			87.0			62.8			68.3		
Approach LOS		E			F			E			E		
Queue Length 50th (ft)	33	192	206	71	~352		~303	316	150	66	195	64	
Queue Length 95th (ft)	68	273	#317	124	#555		#507	408	242	122	291	116	
Internal Link Dist (ft)		193			332			528			749		
Turn Bay Length (ft)	100		150				200		200	200		200	
Base Capacity (vph)	185	404	327	167	368		290	959	401	187	408	319	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Reduced v/c Ratio	0.19	0.54	0.69	0.46	0.95		0.96	0.70	0.46	0.38	0.53	0.24	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 132.2

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay (s/veh): 67.9

Intersection LOS: E

Intersection Capacity Utilization 69.8%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 9: Washington St & Norman St/New Derby St

	Ø1		Ø2		Ø3		Ø4		Ø9
20 s		45 s		20 s		35 s		30 s	
	Ø5		Ø6		Ø7		Ø8		
30 s		35 s		20 s		35 s			

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	145	255	260	20	190	270	135	580	20	145	285	35	
Future Volume (vph)	145	255	260	20	190	270	135	580	20	145	285	35	
Satd. Flow (prot)	1694	1783	1516	0	1774	1516	1711	3396	0	1694	1783	1516	
Flt Permitted	0.950				0.931		0.950			0.950			
Satd. Flow (perm)	1694	1783	1436	0	1660	1445	1711	3396	0	1694	1783	1430	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	167	293	299	0	226	290	147	652	0	161	317	39	
Turn Type	Prot	NA	pm+ov	Perm	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	
Protected Phases	7	4	5		8	1	5	2		1	6	7	9
Permitted Phases			4	8		8						6	
Total Split (s)	20.0	45.0	15.0	25.0	25.0	15.0	15.0	35.0		15.0	35.0	20.0	35.0
Total Lost Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0	
Act Effct Green (s)	13.4	39.0	47.2		18.5	26.7	8.2	26.3		8.2	26.3	39.6	
Actuated g/C Ratio	0.11	0.32	0.39		0.15	0.22	0.07	0.22		0.07	0.22	0.33	
v/c Ratio	0.90	0.51	0.53		0.90	0.90	1.27	0.89		1.40	0.82	0.08	
Control Delay (s/veh)	99.9	40.6	25.2		88.7	62.4	220.0	62.3		268.0	65.0	27.5	
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay (s/veh)	99.9	40.6	25.2		88.7	62.4	220.0	62.3		268.0	65.0	27.5	
LOS	F	D	C		F	E	F	E		F	E	C	
Approach Delay (s/veh)		47.6			73.9			91.3			125.4		
Approach LOS		D			E			F			F		
Queue Length 50th (ft)	143	209	114		193	158	~165	283		~191	257	21	
Queue Length 95th (ft)	#277	292	191		#359	#343	#305	#387		#336	#406	47	
Internal Link Dist (ft)		253			828			250			528		
Turn Bay Length (ft)						300	300						
Base Capacity (vph)	186	574	565		252	323	116	805		115	423	477	
Starvation Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Storage Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Reduced v/c Ratio	0.90	0.51	0.53		0.90	0.90	1.27	0.81		1.40	0.75	0.08	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 121.2

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.40

Intersection Signal Delay (s/veh): 81.8

Intersection LOS: F

Intersection Capacity Utilization 72.6%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Canal St & Mill St & Washington St

			
Ø1	Ø2	Ø4	Ø9
15 s	35 s	45 s	35 s
			
Ø5	Ø6	Ø7	Ø8
15 s	35 s	20 s	25 s

														
Lane Group	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SER	SWL2	SWL	SWR	SWR2	Ø9
Lane Configurations														
Traffic Volume (vph)	355	305	5	35	5	10	290	5	335	5	5	5	5	
Future Volume (vph)	355	305	5	35	5	10	290	5	335	5	5	5	5	
Satd. Flow (prot)	1678	1513	0	0	0	1646	1511	0	1528	0	1621	0	0	
Flt Permitted	0.324					0.950					0.976			
Satd. Flow (perm)	572	1513	0	0	0	1646	1511	0	1431	0	1621	0	0	
Satd. Flow (RTOR)									*100					
Lane Group Flow (vph)	394	384	0	0	0	18	347	0	409	0	20	0	0	
Turn Type	pm+pt	NA			Prot	Prot	NA		Perm	Prot	Prot			
Protected Phases	5	2			1	1	6			7	7			9
Permitted Phases	2								4					
Total Split (s)	22.0	40.0			16.0	16.0	34.0		23.0	13.0	13.0			24.0
Total Lost Time (s)	4.0	8.0				8.0	8.0		5.0		7.5			
Act Effct Green (s)	53.6	44.0				8.2	26.8		18.6		5.7			
Actuated g/C Ratio	0.54	0.45				0.08	0.27		0.19		0.06			
v/c Ratio	0.76	0.57				0.13	0.85		1.17		0.22			
Control Delay (s/veh)	30.3	32.4				51.6	57.6		132.0		57.3			
Queue Delay	0.0	0.0				0.0	0.0		0.0		0.0			
Total Delay (s/veh)	30.3	32.4				51.6	57.6		132.0		57.3			
LOS	C	C				D	E		F		E			
Approach Delay (s/veh)		31.3					57.3				57.3			
Approach LOS		C					E				E			
Queue Length 50th (ft)	161	175				11	222		~277		13			
Queue Length 95th (ft)	#338	#466				35	#421		#456		41			
Internal Link Dist (ft)		285					738				98			
Turn Bay Length (ft)	200					200								
Base Capacity (vph)	519	675				137	410		350		92			
Starvation Cap Reductn	0	0				0	0		0		0			
Spillback Cap Reductn	0	0				0	0		0		0			
Storage Cap Reductn	0	0				0	0		0		0			
Reduced v/c Ratio	0.76	0.57				0.13	0.85		1.17		0.22			

Intersection Summary

Cycle Length: 116

Actuated Cycle Length: 98.6

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.17

Intersection Signal Delay (s/veh): 63.9

Intersection LOS: E

Intersection Capacity Utilization 65.2%

ICU Level of Service C

Analysis Period (min) 15

* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 11: Lafayette St & Dow St & Washington St

 Ø1	 Ø2	 Ø4	 Ø7	 Ø9
16 s	40 s	23 s	13 s	24 s
 Ø5	 Ø6			
22 s	34 s			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	5	25	5	5	20	15	725	10	5	515	15
Future Volume (vph)	20	5	25	5	5	20	15	725	10	5	515	15
Satd. Flow (prot)	0	1353	0	0	1380	0	0	1525	0	0	1506	0
Flt Permitted		0.906			0.965			0.988			0.994	
Satd. Flow (perm)	0	1239	0	0	1337	0	0	1508	0	0	1499	0
Satd. Flow (RTOR)								2			5	
Lane Group Flow (vph)	0	56	0	0	41	0	0	772	0	0	595	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Total Split (s)	18.0	18.0		18.0	18.0		42.0	42.0		42.0	42.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Act Effct Green (s)		13.3			13.3			30.9			30.9	
Actuated g/C Ratio		0.25			0.25			0.59			0.59	
v/c Ratio		0.18			0.12			0.87			0.67	
Control Delay (s/veh)		19.9			19.1			21.1			11.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay (s/veh)		19.9			19.1			21.1			11.2	
LOS		B			B			C			B	
Approach Delay (s/veh)		19.9			19.1			21.1			11.2	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)		15			11			165			102	
Queue Length 95th (ft)		43			27			#406			186	
Internal Link Dist (ft)		657			627			413			957	
Turn Bay Length (ft)												
Base Capacity (vph)		338			365			1119			1113	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.17			0.11			0.69			0.53	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 52.3

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.87

Intersection Signal Delay (s/veh): 17.0

Intersection LOS: B

Intersection Capacity Utilization 65.7%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 15: Lafayette St & Ocean St

Ø2 42 s	Ø4 18 s
Ø6 42 s	Ø8 18 s

Existing Conditions
Seth

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	180	10	110	15	30	20	175	610	10	5	410	135	
Future Volume (vph)	180	10	110	15	30	20	175	610	10	5	410	135	
Satd. Flow (prot)	0	1421	1446	0	1535	1516	1711	1572	0	0	1515	1473	
Flt Permitted		0.700			0.984		0.950				0.993		
Satd. Flow (perm)	0	1042	1446	0	1535	1516	1711	1572	0	0	1506	1473	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	0	218	126	0	51	23	179	632	0	0	494	161	
Turn Type	Perm	NA	pt+ov	Split	NA	Prot	Prot	NA		Perm	NA	custom	
Protected Phases		4	4 5	3	3	3	5	2			6	4	9
Permitted Phases	4									6		6	
Total Split (s)	28.0	28.0		15.0	15.0	15.0	19.0	69.0		50.0	50.0	28.0	28.0
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0			5.0	5.0	
Act Effct Green (s)		23.6	40.3		8.7	8.7	14.3	65.5			46.0	70.9	
Actuated g/C Ratio		0.19	0.32		0.07	0.07	0.11	0.52			0.37	0.57	
v/c Ratio		1.11	0.27		0.48	0.22	0.91	0.77			0.89	0.19	
Control Delay (s/veh)		146.3	24.8		76.6	65.8	102.8	36.1			60.5	11.3	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0	
Total Delay (s/veh)		146.3	24.8		76.6	65.8	102.8	36.1			60.5	11.3	
LOS		F	C		E	E	F	D			E	B	
Approach Delay (s/veh)		101.8			73.2			50.8			48.4		
Approach LOS		F			E			D			D		
Queue Length 50th (ft)		~250	61		45	20	~177	514			~476	58	
Queue Length 95th (ft)		#399	98		89	49	#333	#753			#620	84	
Internal Link Dist (ft)		770			537			1056			584		
Turn Bay Length (ft)			300			300	300					300	
Base Capacity (vph)		196	465		125	124	196	822			554	833	
Starvation Cap Reductn		0	0		0	0	0	0			0	0	
Spillback Cap Reductn		0	0		0	0	0	0			0	0	
Storage Cap Reductn		0	0		0	0	0	0			0	0	
Reduced v/c Ratio		1.11	0.27		0.41	0.19	0.91	0.77			0.89	0.19	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 125.3

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay (s/veh): 60.2

Intersection LOS: E

Intersection Capacity Utilization 84.2%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 16: Lafayette St & Loring Ave/West St

Ø2 69 s		Ø3 15 s	Ø4 28 s	Ø9 28 s
Ø5 19 s	Ø6 50 s			

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations											 		
Traffic Volume (vph)	20	0	70	10	25	115	85	610	0	0	590	290	
Future Volume (vph)	20	0	70	10	25	115	85	610	0	0	590	290	
Satd. Flow (prot)	1516	0	1356	0	1366	0	1516	1595	0	0	2844	0	
Flt Permitted	0.950				0.997		0.155						
Satd. Flow (perm)	1516	0	1296	0	1366	0	247	1595	0	0	2844	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	22	0	76	0	163	0	88	629	0	0	910	0	
Turn Type	Prot		pm+ov	Split	NA		pm+pt	NA			NA		
Protected Phases	7		5	8	8		5	2			6		9
Permitted Phases			7				2						
Total Split (s)	20.0		20.0	20.0	20.0		20.0	63.0			43.0		27.0
Total Lost Time (s)	6.0		6.0		6.0		6.0	6.0			6.0		
Act Effct Green (s)	7.9		15.6		22.1		71.0	71.0			54.5		
Actuated g/C Ratio	0.06		0.12		0.17		0.55	0.55			0.42		
v/c Ratio	0.24		0.48		0.71		0.37	0.72			0.76		
Control Delay (s/veh)	64.0		40.7		69.0		29.5	31.0			41.1		
Queue Delay	0.0		0.0		0.0		0.0	0.1			0.0		
Total Delay (s/veh)	64.0		40.7		69.0		29.5	31.1			41.1		
LOS	E		D		E		C	C			D		
Approach Delay (s/veh)		45.9			69.0			30.9			41.1		
Approach LOS		D			E			C			D		
Queue Length 50th (ft)	18		30		133		41	304			~412		
Queue Length 95th (ft)	47		54		#267		m51	m357			#594		
Internal Link Dist (ft)		297			159			120			231		
Turn Bay Length (ft)			100										
Base Capacity (vph)	163		197		231		271	870			1192		
Starvation Cap Reductn	0		0		0		0	10			0		
Spillback Cap Reductn	0		0		0		0	0			0		
Storage Cap Reductn	0		0		0		0	0			0		
Reduced v/c Ratio	0.13		0.39		0.71		0.32	0.73			0.76		

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay (s/veh): 39.9

Intersection LOS: D

Intersection Capacity Utilization 67.9%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: North St & Rte 107 ramp to Rte 114/Federal St

 Ø2 (R)	 Ø7	 Ø8	 Ø9
63 s	20 s	20 s	27 s
 Ø5			
20 s			
	 Ø6 (R)		
	43 s		

Intersection												
Int Delay, s/veh	6.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	55	550	15	0	850	25	0	0	0	15	40	130
Future Vol, veh/h	55	550	15	0	850	25	0	0	0	15	40	130
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
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	93	93	93	95	95	95	92	92	92	90	90	90
Heavy Vehicles, %	5	5	5	3	3	3	2	2	2	1	1	1
Mvmt Flow	59	591	16	0	895	26	0	0	0	17	44	144

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	931	0	0	618	0	0	1638	1654	928
Stage 1	-	-	-	-	-	-	918	918	-
Stage 2	-	-	-	-	-	-	720	736	-
Critical Hdwy	4.15	-	-	4.13	-	-	6.41	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.51	-
Follow-up Hdwy	2.245	-	-	2.227	-	-	3.509	4.009	3.309
Pot Cap-1 Maneuver	723	-	-	958	-	-	111	99	326
Stage 1	-	-	-	-	-	-	391	352	-
Stage 2	-	-	-	-	-	-	484	427	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	716	-	-	958	-	-	96	0	321
Mov Cap-2 Maneuver	-	-	-	-	-	-	96	0	-
Stage 1	-	-	-	-	-	-	339	0	-
Stage 2	-	-	-	-	-	-	480	0	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.93	0	57.53
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	159	-	-	958	-	-	258
HCM Lane V/C Ratio	0.083	-	-	-	-	-	0.797
HCM Ctrl Dly (s/v)	10.5	0	-	0	-	-	57.5
HCM Lane LOS	B	A	-	A	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	0	-	-	6.1

Intersection										
Int Delay, s/veh	1.3									
Movement	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations										
Traffic Vol, veh/h	0	20	20	852	20	40	1000	160	0	0
Future Vol, veh/h	0	20	20	852	20	40	1000	160	0	0
Conflicting Peds, #/hr	0	5	20	0	10	0	0	20	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	-	None	-	-
Storage Length	0	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	92	92	91	91	91	92	92	92	92	92
Heavy Vehicles, %	2	2	3	3	3	3	3	3	3	3
Mvmt Flow	0	22	22	936	22	43	1087	174	0	0
Major/Minor	Minor1	Major1			Major2			Minor2		
Conflicting Flow All	1652	962	1281	0	0	968	0	0	-	670
Stage 1	1001	-	-	-	-	-	-	-	-	-
Stage 2	650	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.23	4.145	-	-	4.145	-	-	-	6.945
Critical Hdwy Stg 1	6.13	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.2285	-	-	2.2285	-	-	-	3.3285
Pot Cap-1 Maneuver	71	309	535	-	-	704	-	-	0	398
Stage 1	292	-	-	-	-	-	-	-	0	-
Stage 2	425	-	-	-	-	-	-	-	0	-
Platoon blocked, %				-	-		-	-		
Mov Cap-1 Maneuver	54	305	526	-	-	698	-	-	-	384
Mov Cap-2 Maneuver	54	-	-	-	-	-	-	-	-	-
Stage 1	263	-	-	-	-	-	-	-	-	-
Stage 2	356	-	-	-	-	-	-	-	-	-
Approach	EB	SE			NW			SW		
HCM Ctrl Dly, s/v	32.46	0.27			1.14			14.93		
HCM LOS	D							B		
Minor Lane/Major Mvmt	NWL	NWT	NWR	EBLn1	SEL	SET	SER	SWLn1		
Capacity (veh/h)	101	-	-	158	40	-	-	384		
HCM Lane V/C Ratio	0.062	-	-	0.172	0.042	-	-	0.057		
HCM Ctrl Dly (s/v)	10.5	0.9	-	32.5	12.1	0	-	14.9		
HCM Lane LOS	B	A	-	D	B	A	-	B		
HCM 95th %tile Q(veh)	0.2	-	-	0.6	0.1	-	-	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	0	5	10	5	70	0	635	0	0	630	5
Future Vol, veh/h	5	0	5	10	5	70	0	635	0	0	630	5
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
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	84	84	84	84	84	84	97	97	97	94	94	94
Heavy Vehicles, %	4	4	4	2	2	2	3	3	3	4	4	4
Mvmt Flow	6	0	6	12	6	83	0	655	0	0	670	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1350	1338	358	1000	1340	665	686	0	-	-	-	0
Stage 1	683	683	-	655	655	-	-	-	-	-	-	-
Stage 2	668	655	-	345	686	-	-	-	-	-	-	-
Critical Hdwy	7.36	6.56	6.96	7.33	6.53	6.23	4.145	-	-	-	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.16	5.56	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.538	4.038	3.338	3.519	4.019	3.319	2.2285	-	-	-	-	-
Pot Cap-1 Maneuver	116	150	635	209	152	459	900	-	0	0	-	-
Stage 1	402	444	-	454	462	-	-	-	0	0	-	-
Stage 2	443	458	-	644	447	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	90	149	624	206	151	455	892	-	-	-	-	-
Mov Cap-2 Maneuver	90	149	-	206	151	-	-	-	-	-	-	-
Stage 1	399	441	-	454	462	-	-	-	-	-	-	-
Stage 2	354	458	-	633	443	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	29.86		18.82		0		0	
HCM LOS	D		C					

Minor Lane/Major Mvmt	NBL	NBT	EBLnI	WBLnI	SBT	SBR
Capacity (veh/h)	892	-	157	361	-	-
HCM Lane V/C Ratio	-	-	0.076	0.28	-	-
HCM Ctrl Dly (s/v)	0	-	29.9	18.8	-	-
HCM Lane LOS	A	-	D	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	1.1	-	-

Intersection												
Int Delay, s/veh	18											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	5	75	0	90	5	665	0	0	590	5
Future Vol, veh/h	5	0	5	75	0	90	5	665	0	0	590	5
Conflicting Peds, #/hr	20	0	20	20	0	20	20	0	20	20	0	20
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	88	92	88	92	87	87	89	89	92
Heavy Vehicles, %	2	2	2	4	4	4	2	4	4	5	5	2
Mvmt Flow	5	0	5	85	0	102	5	764	0	0	663	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1481	1461	706	1458	1464	784	688	0	-	-	-	0
Stage 1	686	686	-	775	775	-	-	-	-	-	-	-
Stage 2	795	775	-	683	688	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.14	6.54	6.24	4.12	-	-	-	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.536	4.036	3.336	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	104	129	436	106	127	390	906	-	0	0	-	-
Stage 1	438	448	-	388	405	-	-	-	0	0	-	-
Stage 2	381	408	-	436	444	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	72	125	421	102	124	383	890	-	-	-	-	-
Mov Cap-2 Maneuver	72	125	-	102	124	-	-	-	-	-	-	-
Stage 1	430	440	-	384	401	-	-	-	-	-	-	-
Stage 2	271	403	-	423	436	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	36.9		154.45		0.06		0	
HCM LOS	E		F					

Minor Lane/Major Mvmt	NBL	NBT	EBLnI	WBLnI	SBT	SBR
Capacity (veh/h)	13	-	124	170	-	-
HCM Lane V/C Ratio	0.006	-	0.088	1.103	-	-
HCM Ctrl Dly (s/v)	9.1	0	36.9	154.5	-	-
HCM Lane LOS	A	A	E	F	-	-
HCM 95th %tile Q(veh)	0	-	0.3	9.6	-	-

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	30	5	0	0	0	5	570	250	110	610	10	
Future Vol, veh/h	5	30	5	0	0	0	5	570	250	110	610	10	
Conflicting Peds, #/hr	10	0	10	10	0	10	20	0	50	50	0	20	
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	82	82	82	92	92	92	95	95	95	91	91	91	
Heavy Vehicles, %	4	4	4	0	0	0	3	3	3	5	5	5	
Mvmt Flow	6	37	6	0	0	0	5	600	263	121	670	11	
Major/Minor	Minor2						Major1		Major2				
Conflicting Flow All	1558	1861	706				701	0	0	913	0	0	
Stage 1	938	938	-				-	-	-	-	-	-	
Stage 2	621	924	-				-	-	-	-	-	-	
Critical Hdwy	6.44	6.54	6.24				4.13	-	-	4.15	-	-	
Critical Hdwy Stg 1	5.44	5.54	-				-	-	-	-	-	-	
Critical Hdwy Stg 2	5.44	5.54	-				-	-	-	-	-	-	
Follow-up Hdwy	3.536	4.036	3.336				2.227	-	-	2.245	-	-	
Pot Cap-1 Maneuver	122	72	433				891	-	-	734	-	-	
Stage 1	378	341	-				-	-	-	-	-	-	
Stage 2	532	346	-				-	-	-	-	-	-	
Platoon blocked, %								-	-				-
Mov Cap-1 Maneuver	86	0	421				876	-	-	734	-	-	
Mov Cap-2 Maneuver	86	0	-				-	-	-	-	-	-	
Stage 1	367	0	-				-	-	-	-	-	-	
Stage 2	384	0	-				-	-	-	-	-	-	
Approach	EB						NB		SB				
HCM Ctrl Dly, s/v	42.86						0.06		1.64				
HCM LOS	E												
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLnI	SBL	SBT	SBR						
Capacity (veh/h)	10	-	-	143	270	-	-						
HCM Lane V/C Ratio	0.006	-	-	0.342	0.165	-	-						
HCM Ctrl Dly (s/v)	9.1	0	-	42.9	10.9	0	-						
HCM Lane LOS	A	A	-	E	B	A	-						
HCM 95th %tile Q(veh)	0	-	-	1.4	0.6	-	-						

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	0	5	5	0	25	5	760	15	10	525	5
Future Vol, veh/h	5	0	5	5	0	25	5	760	15	10	525	5
Conflicting Peds, #/hr	20	0	20	20	0	20	20	0	20	20	0	20
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	83	83	83	78	78	78	94	94	94	95	95	95
Heavy Vehicles, %	10	10	10	0	0	0	4	4	4	6	6	6
Mvmt Flow	6	0	6	6	0	32	5	809	16	11	553	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1435	1451	595	1441	1446	856	578	0	0	844	0	0
Stage 1	596	596	-	847	847	-	-	-	-	-	-	-
Stage 2	839	855	-	594	599	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.1	6.5	6.2	4.14	-	-	4.16	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.5	4	3.3	2.236	-	-	2.254	-	-
Pot Cap-1 Maneuver	107	126	489	112	133	360	986	-	-	775	-	-
Stage 1	476	479	-	359	381	-	-	-	-	-	-	-
Stage 2	349	364	-	495	494	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	91	118	473	103	124	348	969	-	-	761	-	-
Mov Cap-2 Maneuver	91	118	-	103	124	-	-	-	-	-	-	-
Stage 1	459	461	-	349	370	-	-	-	-	-	-	-
Stage 2	308	354	-	471	475	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	30.65		22.06		0.06		0.18					
HCM LOS	D		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLnI	WBLnI	SBL	SBT	SBR				
Capacity (veh/h)	11	-	-	152	249	33	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.079	0.154	0.014	-	-				
HCM Ctrl Dly (s/v)	8.7	0	-	30.6	22.1	9.8	0	-				
HCM Lane LOS	A	A	-	D	C	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.3	0.5	0	-	-				

Intersection						
Int Delay, s/veh	6.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	455	745	0	0	875
Future Vol, veh/h	0	455	745	0	0	875
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	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	474	776	0	0	911
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	388	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.33	-	-	-	-
Pot Cap-1 Maneuver	0	608	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	608	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	28.72	0		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	WBLnl	SBT			
Capacity (veh/h)	-	608	-			
HCM Lane V/C Ratio	-	0.78	-			
HCM Ctrl Dly (s/v)	-	28.7	-			
HCM Lane LOS	-	D	-			
HCM 95th %tile Q(veh)	-	7.4	-			

Part 2: 2025 Existing Conditions: Weekday PM Peak-Hour LOS and Delays

2: School St/Orne St & North St
Seth

2025 Existing PM
10/07/2025

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	10	610	25	15	705	35	70	60	30	135	130	20	
Future Volume (vph)	10	610	25	15	705	35	70	60	30	135	130	20	
Satd. Flow (prot)	1711	1564	0	1711	1562	0	0	1495	0	0	1753	0	
Flt Permitted	0.065			0.131				0.979			0.977		
Satd. Flow (perm)	117	1564	0	236	1562	0	0	1495	0	0	1753	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	11	690	0	16	779	0	0	188	0	0	324	0	
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA		
Protected Phases		4			8		2	2		6	6		9
Permitted Phases	4			8									
Total Split (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0		25.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0			6.0		
Act Effct Green (s)	61.8	61.8		61.8	61.8			20.4			23.3		
Actuated g/C Ratio	0.45	0.45		0.45	0.45			0.15			0.17		
v/c Ratio	0.21	0.98		0.15	1.11			0.85			1.09		
Control Delay (s/veh)	42.3	68.7		32.7	104.6			90.3			131.7		
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0		
Total Delay (s/veh)	42.3	68.7		32.7	104.6			90.3			131.7		
LOS	D	E		C	F			F			F		
Approach Delay (s/veh)		68.3			103.2			90.3			131.7		
Approach LOS		E			F			F			F		
Queue Length 50th (ft)	7	~755		10	~936			181			~385		
Queue Length 95th (ft)	28	#1002		30	#1190			#281			#565		
Internal Link Dist (ft)		541			1292			401			319		
Turn Bay Length (ft)	100			100									
Base Capacity (vph)	52	703		105	702			253			297		
Starvation Cap Reductn	0	0		0	0			0			0		
Spillback Cap Reductn	0	0		0	0			0			0		
Storage Cap Reductn	0	0		0	0			0			0		
Reduced v/c Ratio	0.21	0.98		0.15	1.11			0.74			1.09		

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 137.5

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay (s/veh): 94.4

Intersection LOS: F

Intersection Capacity Utilization 69.8%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: School St/Orne St & North St

 Ø2	 Ø6	 Ø4	 Ø9
29 s	29 s	67 s	25 s
		 Ø8	
		67 s	

3: Mason St & North St
Seth

2025 Existing PM
10/07/2025

							Ø4	Ø9
Lane Group	SET	SER	NWL	NWT	NEL	NER	Ø4	Ø9
Lane Configurations								
Traffic Volume (vph)	750	30	445	715	0	170		
Future Volume (vph)	750	30	445	715	0	170		
Satd. Flow (prot)	1506	0	1441	1516	0	1312		
Flt Permitted			0.950					
Satd. Flow (perm)	1506	0	1441	1516	0	1260		
Satd. Flow (RTOR)								
Lane Group Flow (vph)	848	0	468	753	0	200		
Turn Type	NA		Prot	NA		pm+ov		
Protected Phases	6		5	2		5	4	9
Permitted Phases						4		
Total Split (s)	35.0		25.0	60.0		25.0	23.0	26.0
Total Lost Time (s)	4.0		5.0	4.0		5.0		
Act Effct Green (s)	32.0		20.6	60.6		20.6		
Actuated g/C Ratio	0.45		0.29	0.86		0.29		
v/c Ratio	1.24		1.11	0.58		0.52		
Control Delay (s/veh)	143.3		105.7	8.5		30.4		
Queue Delay	0.0		0.0	0.0		0.0		
Total Delay (s/veh)	143.3		105.7	8.5		30.4		
LOS	F		F	A		C		
Approach Delay (s/veh)	143.3			45.7	30.4			
Approach LOS	F			D	C			
Queue Length 50th (ft)	~357		164	0		56		
Queue Length 95th (ft)	#878		#525	413		161		
Internal Link Dist (ft)	1292			252	419			
Turn Bay Length (ft)								
Base Capacity (vph)	684		422	1304		384		
Starvation Cap Reductn	0		0	0		0		
Spillback Cap Reductn	0		0	0		0		
Storage Cap Reductn	0		0	0		0		
Reduced v/c Ratio	1.24		1.11	0.58		0.52		

Intersection Summary

Cycle Length: 109

Actuated Cycle Length: 70.4

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.24

Intersection Signal Delay (s/veh): 80.9

Intersection LOS: F

Intersection Capacity Utilization 95.4%

ICU Level of Service F

Analysis Period (min) 15

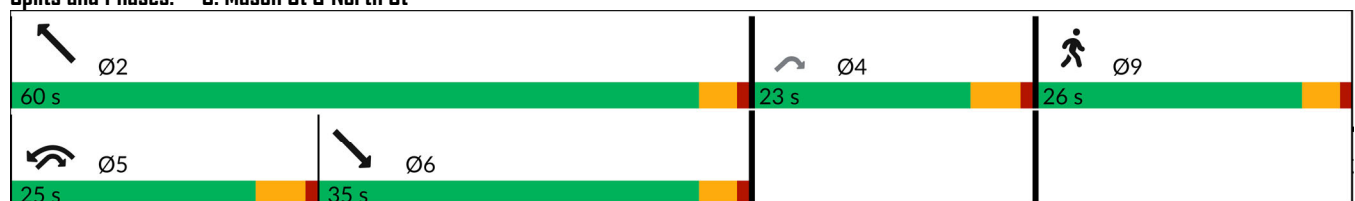
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Mason St & North St



													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	105	100	40	0	0	0	0	485	45	135	580	70	
Future Volume (vph)	105	100	40	0	0	0	0	485	45	135	580	70	
Satd. Flow (prot)	0	1374	1369	0	0	0	0	1403	0	1531	1382	0	
Flt Permitted		0.975								0.195			
Satd. Flow (perm)	0	1374	1294	0	0	0	0	1403	0	314	1382	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	0	230	45	0	0	0	0	570	0	145	699	0	
Turn Type	Split	NA	Perm					NA		pm+pt	NA		
Protected Phases	4	4						2		1	6		9
Permitted Phases			4							6			
Total Split (s)	30.0	30.0	30.0					45.0		20.0	65.0		35.0
Total Lost Time (s)		5.0	5.0					5.0		4.0	5.0		
Act Effct Green (s)		23.9	23.9					56.1		73.9	72.9		
Actuated g/C Ratio		0.18	0.18					0.43		0.57	0.56		
v/c Ratio		0.91	0.19					0.94		0.49	0.90		
Control Delay (s/veh)		89.4	46.5					63.7		32.2	42.5		
Queue Delay		0.0	0.0					1.0		0.0	0.0		
Total Delay (s/veh)		89.4	46.5					64.7		32.2	42.5		
LOS		F	D					E		C	D		
Approach Delay (s/veh)		82.4						64.7			40.8		
Approach LOS		F						E			D		
Queue Length 50th (ft)		190	32					~526		58	369		
Queue Length 95th (ft)		#331	68					#821		m88	m#721		
Internal Link Dist (ft)		473			358			431			307		
Turn Bay Length (ft)			75										
Base Capacity (vph)		264	248					605		334	774		
Starvation Cap Reductn		0	0					0		0	0		
Spillback Cap Reductn		0	0					5		0	0		
Storage Cap Reductn		0	0					0		0	0		
Reduced v/c Ratio		0.87	0.18					0.95		0.43	0.90		

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay (s/veh): 55.6

Intersection LOS: E

Intersection Capacity Utilization 70.7%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: North St & Essex St



9: Washington St & Norman St/New Derby St
Seth

2025 Existing PM
10/07/2025

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	40	215	210	90	310	55	190	440	160	80	255	70	
Future Volume (vph)	40	215	210	90	310	55	190	440	160	80	255	70	
Satd. Flow (prot)	1711	1801	1531	1531	1566	0	1531	3061	1369	1711	1801	1531	
Flt Permitted	0.950			0.950			0.950			0.950			
Satd. Flow (perm)	1711	1801	1465	1531	1566	0	1531	3061	1263	1711	1801	1411	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	45	242	236	99	401	0	200	463	168	88	280	77	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	
Protected Phases	7	4		3	8		5	2		1	6		9
Permitted Phases			4						2			6	
Total Split (s)	18.0	40.0	40.0	18.0	40.0		26.0	36.0	36.0	26.0	36.0	36.0	30.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	
Act Effct Green (s)	9.1	29.6	29.6	11.6	35.9		20.6	37.1	37.1	12.5	25.0	25.0	
Actuated g/C Ratio	0.07	0.22	0.22	0.09	0.27		0.15	0.28	0.28	0.09	0.19	0.19	
v/c Ratio	0.39	0.61	0.73	0.75	0.96		0.85	0.55	0.48	0.55	0.84	0.29	
Control Delay (s/veh)	75.6	57.0	65.6	96.8	86.3		89.2	50.0	53.8	76.2	76.3	54.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	75.6	57.0	65.6	96.8	86.3		89.2	50.0	53.8	76.2	76.3	54.1	
LOS	E	E	E	F	F		F	D	D	E	E	D	
Approach Delay (s/veh)		62.5			88.4			60.2			72.4		
Approach LOS		E			F			E			E		
Queue Length 50th (ft)	42	210	211	94	~428		191	207	140	82	256	63	
Queue Length 95th (ft)	85	305	313	#202	#666		#367	288	237	142	#393	116	
Internal Link Dist (ft)		193			332			528			749		
Turn Bay Length (ft)	100		150				200		200	200		200	
Base Capacity (vph)	160	479	390	143	419		239	848	349	267	422	331	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Reduced v/c Ratio	0.28	0.51	0.61	0.69	0.96		0.84	0.55	0.48	0.33	0.66	0.23	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 134

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay (s/veh): 69.2

Intersection LOS: E

Intersection Capacity Utilization 72.4%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 9: Washington St & Norman St/New Derby St

 Ø1	 Ø2	 Ø3	 Ø4	 Ø9
26 s	36 s	18 s	40 s	30 s
 Ø5	 Ø6	 Ø7	 Ø8	
26 s	36 s	18 s	40 s	

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	155	260	370	15	200	250	130	445	45	140	370	30	
Future Volume (vph)	155	260	370	15	200	250	130	445	45	140	370	30	
Satd. Flow (prot)	1711	1801	1531	0	1761	1501	1694	3316	0	1728	1818	1546	
Flt Permitted	0.950				0.955		0.950			0.950			
Satd. Flow (perm)	1711	1801	1453	0	1687	1436	1694	3316	0	1728	1818	1454	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	161	271	385	0	250	291	148	557	0	152	402	33	
Turn Type	Prot	NA	pm+ov	Perm	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	
Protected Phases	7	4	5		8	1	5	2		1	6	7	9
Permitted Phases			4	8		8						6	
Total Split (s)	20.0	45.0	18.0	25.0	25.0	18.0	18.0	32.0		18.0	32.0	20.0	35.0
Total Lost Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0	
Act Effct Green (s)	13.2	38.6	49.8		18.3	29.5	11.2	25.4		11.2	25.4	38.6	
Actuated g/C Ratio	0.11	0.31	0.40		0.15	0.24	0.09	0.21		0.09	0.21	0.31	
v/c Ratio	0.88	0.48	0.65		1.00	0.83	0.96	0.81		0.97	1.07	0.07	
Control Delay (s/veh)	97.0	40.1	27.2		110.9	48.1	121.4	58.9		122.1	114.7	29.3	
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay (s/veh)	97.0	40.1	27.2		110.9	48.1	121.4	58.9		122.1	114.7	29.3	
LOS	F	D	C		F	D	F	E		F	F	C	
Approach Delay (s/veh)		45.2			77.1			72.1			111.8		
Approach LOS		D			E			E			F		
Queue Length 50th (ft)	137	191	146		~233	133	~134	242		~138	~398	19	
Queue Length 95th (ft)	#277	281	255		#379	#260	#265	#323		#280	#601	43	
Internal Link Dist (ft)		253			828			250			528		
Turn Bay Length (ft)						300	300						
Base Capacity (vph)	184	565	595		250	349	154	684		157	375	466	
Starvation Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Storage Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Reduced v/c Ratio	0.88	0.48	0.65		1.00	0.83	0.96	0.81		0.97	1.07	0.07	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 123

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.07

Intersection Signal Delay (s/veh): 73.6

Intersection LOS: E

Intersection Capacity Utilization 75.0%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Canal St & Mill St & Washington St

 Ø1	 Ø2	 Ø4	 Ø9
18 s	32 s	45 s	35 s
 Ø5	 Ø6	 Ø7	 Ø8
18 s	32 s	20 s	25 s

														
Lane Group	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SER	SWL2	SWL	SWR	SWR2	Ø9
Lane Configurations														
Traffic Volume (vph)	330	280	10	30	25	40	420	10	345	5	10	5	5	
Future Volume (vph)	330	280	10	30	25	40	420	10	345	5	10	5	5	
Satd. Flow (prot)	1678	1511	0	0	0	1728	1584	0	1558	0	1578	0	0	
Flt Permitted	0.175					0.950					0.971			
Satd. Flow (perm)	309	1511	0	0	0	1728	1584	0	1455	0	1578	0	0	
Satd. Flow (RTOR)									*100					
Lane Group Flow (vph)	351	341	0	0	0	68	453	0	401	0	25	0	0	
Turn Type	pm+pt	NA			Prot	Prot	NA		Perm	Prot	Prot			
Protected Phases	5	2			1	1	6			7	7			9
Permitted Phases	2								4					
Total Split (s)	22.0	44.0			16.0	16.0	38.0		23.0	17.0	17.0			24.0
Total Lost Time (s)	6.0	8.0				8.0	8.0		5.0		7.5			
Act Effct Green (s)	56.0	41.5				8.3	31.1		18.7		7.3			
Actuated g/C Ratio	0.52	0.39				0.08	0.29		0.17		0.07			
v/c Ratio	0.94	0.58				0.51	0.98		1.19		0.23			
Control Delay (s/veh)	58.8	38.1				67.5	79.6		143.4		58.6			
Queue Delay	0.0	0.0				0.0	0.0		0.0		0.0			
Total Delay (s/veh)	58.8	38.1				67.5	79.6		143.4		58.6			
LOS	E	D				E	E		F		E			
Approach Delay (s/veh)		48.6					78.0				58.6			
Approach LOS		D					E				E			
Queue Length 50th (ft)	~235	244				53	~422		~341		19			
Queue Length 95th (ft)	#439	#393				#119	#644		#513		49			
Internal Link Dist (ft)		285					738				98			
Turn Bay Length (ft)	200					200								
Base Capacity (vph)	374	585				134	461		336		145			
Starvation Cap Reductn	0	0				0	0		0		0			
Spillback Cap Reductn	0	0				0	0		0		0			
Storage Cap Reductn	0	0				0	0		0		0			
Reduced v/c Ratio	0.94	0.58				0.51	0.98		1.19		0.17			

Intersection Summary

Cycle Length: 124

Actuated Cycle Length: 106.9

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.19

Intersection Signal Delay (s/veh): 81.3

Intersection LOS: F

Intersection Capacity Utilization 72.6%

ICU Level of Service C

Analysis Period (min) 15

* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 11: Lafayette St & Dow St & Washington St

	Ø1		Ø2		Ø4		Ø7		Ø9
16 s		44 s		23 s		17 s		24 s	
	Ø5		Ø6						
22 s		38 s							

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	210	25	80	25	25	10	165	560	20	5	375	180	
Future Volume (vph)	210	25	80	25	25	10	165	560	20	5	375	180	
Satd. Flow (prot)	0	1479	1501	0	1569	1561	1694	1552	0	0	1559	1516	
Flt Permitted		0.700			0.976		0.950				0.991		
Satd. Flow (perm)	0	1082	1501	0	1569	1561	1694	1552	0	0	1546	1516	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	0	294	100	0	68	14	179	631	0	0	437	207	
Turn Type	Perm	NA	pt+ov	Split	NA	Prot	Prot	NA		Perm	NA	custom	
Protected Phases		4	4 5	3	3	3	5	2			6	4	9
Permitted Phases	4									6		6	
Total Split (s)	34.0	34.0		16.0	16.0	16.0	17.0	62.0		45.0	45.0	34.0	28.0
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0			5.0	5.0	
Act Effct Green (s)		30.0	44.9		9.5	9.5	12.4	57.0			39.4	70.8	
Actuated g/C Ratio		0.24	0.36		0.08	0.08	0.10	0.46			0.32	0.57	
v/c Ratio		1.12	0.18		0.57	0.12	1.05	0.88			0.89	0.24	
Control Delay (s/veh)		137.3	21.4		79.0	62.0	139.4	49.7			64.2	11.1	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0	
Total Delay (s/veh)		137.3	21.4		79.0	62.0	139.4	49.7			64.2	11.1	
LOS		F	C		E	E	F	D			E	B	
Approach Delay (s/veh)		107.9			76.1			69.5			47.1		
Approach LOS		F			E			E			D		
Queue Length 50th (ft)		~344	45		61	12	~201	569			398	73	
Queue Length 95th (ft)		#450	68		92	29	#358	#833			#588	107	
Internal Link Dist (ft)		770			537			1056			584		
Turn Bay Length (ft)			300			300	300					300	
Base Capacity (vph)		262	544		144	143	170	738			516	867	
Starvation Cap Reductn		0	0		0	0	0	0			0	0	
Spillback Cap Reductn		0	0		0	0	0	0			0	0	
Storage Cap Reductn		0	0		0	0	0	0			0	0	
Reduced v/c Ratio		1.12	0.18		0.47	0.10	1.05	0.86			0.85	0.24	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 123.7

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.12

Intersection Signal Delay (s/veh): 70.1

Intersection LOS: E

Intersection Capacity Utilization 82.8%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 16: Lafayette St & Loring Ave/West St

 62 s		 16 s	 34 s	 28 s
 17 s	 45 s			

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	45	0	105	10	20	90	100	555	0	0	690	220	
Future Volume (vph)	45	0	105	10	20	90	100	555	0	0	690	220	
Satd. Flow (prot)	1501	0	1343	0	1384	0	1546	1627	0	0	2924	0	
Flt Permitted	0.950				0.996		0.097						
Satd. Flow (perm)	1501	0	1284	0	1384	0	158	1627	0	0	2924	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	51	0	118	0	223	0	106	590	0	0	1034	0	
Turn Type	Prot		pm+ov	Split	NA		pm+pt	NA			NA		
Protected Phases	7		5	8	8		5	2			6		9
Permitted Phases			7				2						
Total Split (s)	20.0		20.0	20.0	20.0		20.0	63.0			43.0		27.0
Total Lost Time (s)	6.0		6.0		6.0		6.0	6.0			6.0		
Act Effct Green (s)	10.0		19.7		20.6		67.8	67.8			50.8		
Actuated g/C Ratio	0.08		0.15		0.16		0.52	0.52			0.39		
v/c Ratio	0.44		0.59		1.02		0.53	0.70			0.91		
Control Delay (s/veh)	68.4		40.4		120.7		44.8	30.9			51.1		
Queue Delay	0.0		0.0		0.0		0.0	0.1			0.0		
Total Delay (s/veh)	68.4		40.4		120.7		44.8	31.1			51.1		
LOS	E		D		F		D	C			D		
Approach Delay (s/veh)		48.8			120.7			33.2			51.1		
Approach LOS		D			F			C			D		
Queue Length 50th (ft)	42		46		~221		58	286			~538		
Queue Length 95th (ft)	83		72		#200		m82	m345			#681		
Internal Link Dist (ft)		297			159			120			231		
Turn Bay Length (ft)			100										
Base Capacity (vph)	161		229		218		231	848			1142		
Starvation Cap Reductn	0		0		0		0	16			0		
Spillback Cap Reductn	0		0		0		0	0			0		
Storage Cap Reductn	0		0		0		0	0			0		
Reduced v/c Ratio	0.32		0.52		1.02		0.46	0.71			0.91		

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay (s/veh): 52.4

Intersection LOS: D

Intersection Capacity Utilization 66.7%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: North St & Rte 107 ramp to Rte 114/Federal St

	Ø2 (R)		Ø7		Ø8		Ø9
63 s		20 s		20 s		27 s	
	Ø5		Ø6 (R)				
20 s		43 s					

Intersection												
Int Delay, s/veh	8.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	30	610	35	10	800	10	0	0	0	15	30	150
Future Vol, veh/h	30	610	35	10	800	10	0	0	0	15	30	150
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
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	87	87	87	93	93	93	92	92	92	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	1	1	1
Mvmt Flow	34	701	40	11	860	11	0	0	0	18	36	181

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	881	0	0	751	0	0	1677	1717	886
Stage 1	-	-	-	-	-	-	897	897	-
Stage 2	-	-	-	-	-	-	780	820	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.41	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.51	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.509	4.009	3.309
Pot Cap-1 Maneuver	767	-	-	858	-	-	105	90	345
Stage 1	-	-	-	-	-	-	400	360	-
Stage 2	-	-	-	-	-	-	454	390	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	761	-	-	858	-	-	93	0	339
Mov Cap-2 Maneuver	-	-	-	-	-	-	93	0	-
Stage 1	-	-	-	-	-	-	365	0	-
Stage 2	-	-	-	-	-	-	439	0	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.44	0.11	64.61
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	79	-	-	22	-	-	273
HCM Lane V/C Ratio	0.045	-	-	0.013	-	-	0.859
HCM Ctrl Dly (s/v)	10	0	-	9.2	0	-	64.6
HCM Lane LOS	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0.1	-	-	0	-	-	7.3

Intersection										
Int Delay, s/veh	4.5									
Movement	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations										
Traffic Vol, veh/h	5	25	15	910	15	20	1100	125	0	0
Future Vol, veh/h	5	25	15	910	15	20	1100	125	0	0
Conflicting Peds, #/hr	0	5	20	0	10	0	0	20	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	-	None	-	-
Storage Length	0	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	67	67	91	91	91	91	91	91	71	71
Heavy Vehicles, %	8	8	2	2	2	2	2	2	5	5
Mvmt Flow	7	37	16	1000	16	22	1209	137	0	0
Major/Minor	Minor1		Major1		Major2			Minor2		
Conflicting Flow All	1720	1023	1366	0	0	1026	0	0	-	713
Stage 1	1051	-	-	-	-	-	-	-	-	-
Stage 2	668	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.42	6.32	4.13	-	-	4.13	-	-	-	6.975
Critical Hdwy Stg 1	6.22	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.62	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2	2	2.219	-	-	2.219	-	-	-	3.3475
Pot Cap-1 Maneuver	81	392	501	-	-	674	-	-	0	370
Stage 1	386	-	-	-	-	-	-	-	0	-
Stage 2	630	-	-	-	-	-	-	-	0	-
Platoon blocked, %				-	-		-	-		
Mov Cap-1 Maneuver	63	386	492	-	-	668	-	-	-	357
Mov Cap-2 Maneuver	63	-	-	-	-	-	-	-	-	-
Stage 1	354	-	-	-	-	-	-	-	-	-
Stage 2	540	-	-	-	-	-	-	-	-	-
Approach	EB		SE		NW			SW		
HCM Ctrl Dly, s/v	129.33		0.2		0.65			15.96		
HCM LOS	F							C		
Minor Lane/Major Mvmt	NWL	NWT	NWR	EBLn1	SEL	SET	SER	SWLn1		
Capacity (veh/h)	51	-	-	92	29	-	-	357		
HCM Lane V/C Ratio	0.033	-	-	0.814	0.034	-	-	0.079		
HCM Ctrl Dly (s/v)	10.6	0.5	-	129.3	12.6	0	-	16		
HCM Lane LOS	B	A	-	F	B	A	-	C		
HCM 95th %tile Q(veh)	0.1	-	-	4.3	0.1	-	-	0.3		

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	20	0	115	0	590	0	0	760	5
Future Vol, veh/h	0	0	0	20	0	115	0	590	0	0	760	5
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
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	84	84	84	77	77	77	93	93	93	90	90	90
Heavy Vehicles, %	0	0	0	1	1	1	1	1	1	2	2	2
Mvmt Flow	0	0	0	26	0	149	0	634	0	0	844	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1502	1492	445	1067	1494	644	860	0	-	-	-	0
Stage 1	857	857	-	634	634	-	-	-	-	-	-	-
Stage 2	644	634	-	432	860	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.5	6.9	7.315	6.515	6.215	4.115	-	-	-	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.115	5.515	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.515	5.515	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5095	4.0095	3.3095	2.2095	-	-	-	-	-
Pot Cap-1 Maneuver	93	125	566	189	123	474	785	-	0	0	-	-
Stage 1	322	377	-	468	474	-	-	-	0	0	-	-
Stage 2	465	476	-	575	374	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	62	124	556	187	122	470	778	-	-	-	-	-
Mov Cap-2 Maneuver	62	124	-	187	122	-	-	-	-	-	-	-
Stage 1	320	373	-	468	474	-	-	-	-	-	-	-
Stage 2	314	476	-	570	370	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	0		22.02		0		0	
HCM LOS	A		C					

Minor Lane/Major Mvmt	NBL	NBT	EBLnI	WBLnI	SBT	SBR
Capacity (veh/h)	778	-	-	384	-	-
HCM Lane V/C Ratio	-	-	-	0.457	-	-
HCM Ctrl Dly (s/v)	0	-	0	22	-	-
HCM Lane LOS	A	-	A	C	-	-
HCM 95th %tile Q(veh)	0	-	-	2.3	-	-

Intersection												
Int Delay, s/veh	24.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	10	160	0	90	5	585	0	0	730	10
Future Vol, veh/h	5	0	10	160	0	90	5	585	0	0	730	10
Conflicting Peds, #/hr	20	0	20	20	0	20	20	0	20	20	0	20
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	63	63	63	94	94	94	86	86	86	94	94	94
Heavy Vehicles, %	0	0	0	4	4	4	2	2	2	2	2	2
Mvmt Flow	8	0	16	170	0	96	6	680	0	0	777	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1514	1494	822	1488	1499	700	807	0	-	-	-	0
Stage 1	802	802	-	692	692	-	-	-	-	-	-	-
Stage 2	712	692	-	797	807	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	6.5	6.54	6.24	4.12	-	-	-	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	2	2	2	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	99	124	377	180	174	645	818	-	0	0	-	-
Stage 1	381	399	-	666	748	-	-	-	0	0	-	-
Stage 2	427	448	-	573	645	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	80	121	364	~ 167	169	634	804	-	-	-	-	-
Mov Cap-2 Maneuver	80	121	-	~ 167	169	-	-	-	-	-	-	-
Stage 1	374	392	-	658	739	-	-	-	-	-	-	-
Stage 2	352	443	-	538	634	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	30.06	157.65	0.08	0
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLnI	WBLnI	SBT	SBR
Capacity (veh/h)	15	-	167	228	-	-
HCM Lane V/C Ratio	0.007	-	0.142	1.169	-	-
HCM Ctrl Dly (s/v)	9.5	0	30.1	157.6	-	-
HCM Lane LOS	A	A	D	F	-	-
HCM 95th %tile Q(veh)	0	-	0.5	12.7	-	-

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

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Traffic Vol, veh/h	10	15	5	0	0	0	10	575	210	90	770	10
Future Vol, veh/h	10	15	5	0	0	0	10	575	210	90	770	10
Conflicting Peds, #/hr	10	0	10	10	0	10	20	0	50	50	0	20
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	61	61	61	92	92	92	88	88	88	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	2	2	2	3	3	3
Mvmt Flow	16	25	8	0	0	0	11	653	239	97	828	11
Major/Minor	Minor2						Major1		Major2			
Conflicting Flow All	1733	2012	863				859	0	0	942	0	0
Stage 1	1047	1047	-				-	-	-	-	-	-
Stage 2	686	965	-				-	-	-	-	-	-
Critical Hdwy	6.4	6.5	6.2				4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	5.4	5.5	-				-	-	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-				-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3				2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	98	60	357				782	-	-	724	-	-
Stage 1	341	308	-				-	-	-	-	-	-
Stage 2	504	336	-				-	-	-	-	-	-
Platoon blocked, %							-	-				
Mov Cap-1 Maneuver	68	0	348				769	-	-	724	-	-
Mov Cap-2 Maneuver	68	0	-				-	-	-	-	-	-
Stage 1	325	0	-				-	-	-	-	-	-
Stage 2	371	0	-				-	-	-	-	-	-
Approach	EB						NB		SB			
HCM Ctrl Dly, s/v	80						0.12		1.11			
HCM LOS	F											
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLnI	SBL	SBT	SBR					
Capacity (veh/h)	21	-	-	93	186	-	-					
HCM Lane V/C Ratio	0.015	-	-	0.526	0.134	-	-					
HCM Ctrl Dly (s/v)	9.8	0	-	80	10.7	0	-					
HCM Lane LOS	A	A	-	F	B	A	-					
HCM 95th %tile Q(veh)	0	-	-	2.3	0.5	-	-					

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	5	5	10	0	25	5	715	10	45	680	15
Future Vol, veh/h	5	5	5	10	0	25	5	715	10	45	680	15
Conflicting Peds, #/hr	20	0	20	20	0	20	20	0	20	20	0	20
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	83	83	83	69	69	69	93	93	93	96	96	96
Heavy Vehicles, %	10	10	10	0	0	0	3	3	3	2	2	2
Mvmt Flow	6	6	6	14	0	36	5	769	11	47	708	16
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1629	1640	756	1630	1643	814	744	0	0	800	0	0
Stage 1	830	830	-	805	805	-	-	-	-	-	-	-
Stage 2	800	810	-	825	838	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.1	6.5	6.2	4.13	-	-	4.12	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.5	4	3.3	2.227	-	-	2.218	-	-
Pot Cap-1 Maneuver	78	96	395	82	101	381	859	-	-	823	-	-
Stage 1	353	374	-	379	398	-	-	-	-	-	-	-
Stage 2	367	382	-	370	385	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	61	83	382	65	87	368	844	-	-	809	-	-
Mov Cap-2 Maneuver	61	83	-	65	87	-	-	-	-	-	-	-
Stage 1	313	332	-	368	387	-	-	-	-	-	-	-
Stage 2	322	371	-	317	341	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	50.95		38.14		0.06		0.59					
HCM LOS	F		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLnI	WBLnI	SBL	SBT	SBR				
Capacity (veh/h)	12	-	-	96	158	109	-	-				
HCM Lane V/C Ratio	0.006	-	-	0.188	0.321	0.058	-	-				
HCM Ctrl Dly (s/v)	9.3	0	-	50.9	38.1	9.7	0	-				
HCM Lane LOS	A	A	-	F	E	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.7	1.3	0.2	-	-				

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	15	25	5	5	10	15	695	10	20	595	30
Future Vol, veh/h	15	15	25	5	5	10	15	695	10	20	595	30
Conflicting Peds, #/hr	10	0	10	10	0	10	12	0	12	12	0	12
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	75	75	75	64	64	64	96	96	96	98	98	98
Heavy Vehicles, %	4	4	4	6	6	6	3	3	3	2	2	2
Mvmt Flow	20	20	33	8	8	16	16	724	10	20	607	31

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1444	1453	644	1440	1463	751	650	0	0	746	0	0
Stage 1	675	675	-	772	772	-	-	-	-	-	-	-
Stage 2	769	778	-	668	691	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.16	6.56	6.26	4.13	-	-	4.12	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.16	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.16	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.554	4.054	3.354	2.227	-	-	2.218	-	-
Pot Cap-1 Maneuver	109	129	469	108	126	404	932	-	-	862	-	-
Stage 1	440	450	-	386	403	-	-	-	-	-	-	-
Stage 2	391	404	-	441	440	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	90	118	460	77	115	396	922	-	-	853	-	-
Mov Cap-2 Maneuver	90	118	-	77	115	-	-	-	-	-	-	-
Stage 1	419	429	-	371	388	-	-	-	-	-	-	-
Stage 2	354	388	-	372	419	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	46.24		35.18		0.19		0.29	
HCM LOS	E		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLnI	WBLnI	SBL	SBT	SBR
Capacity (veh/h)	37	-	-	158	150	55	-	-
HCM Lane V/C Ratio	0.017	-	-	0.465	0.208	0.024	-	-
HCM Ctrl Dly (s/v)	9	0	-	46.2	35.2	9.3	0	-
HCM Lane LOS	A	A	-	E	E	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	2.2	0.8	0.1	-	-

Intersection						
Int Delay, s/veh	12.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	585	655	0	0	875
Future Vol, veh/h	0	585	655	0	0	875
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	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	609	682	0	0	911
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	341	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.33	-	-	-	-
Pot Cap-1 Maneuver	0	652	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	652	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Ctrl Dly, s/v	46.24	0	0			
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	WBLnl	SBT			
Capacity (veh/h)	-	652	-			
HCM Lane V/C Ratio	-	0.935	-			
HCM Ctrl Dly (s/v)	-	46.2	-			
HCM Lane LOS	-	E	-			
HCM 95th %tile Q(veh)	-	12.7	-			

Part 3: 2040 No Build Conditions: Weekday AM Peak-Hour LOS and Delays

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	5	530	10	15	740	50	60	85	20	120	75	35	
Future Volume (vph)	5	530	10	15	740	50	60	85	20	120	75	35	
Satd. Flow (prot)	1662	1525	0	1694	1543	0	0	1487	0	0	1688	0	
Flt Permitted	0.063			0.267				0.982			0.975		
Satd. Flow (perm)	110	1525	0	476	1543	0	0	1487	0	0	1688	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	5	556	0	16	858	0	0	201	0	0	307	0	
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA		
Protected Phases		4			8		2	2		6	6		9
Permitted Phases	4			8									
Total Split (s)	69.0	69.0		69.0	69.0		28.0	28.0		28.0	28.0		25.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0			6.0		
Act Effct Green (s)	63.6	63.6		63.6	63.6			21.3			22.2		
Actuated g/C Ratio	0.47	0.47		0.47	0.47			0.16			0.17		
v/c Ratio	0.10	0.77		0.07	1.18			0.85			1.10		
Control Delay (s/veh)	31.4	40.3		25.1	125.8			86.3			134.7		
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0		
Total Delay (s/veh)	31.4	40.3		25.1	125.8			86.3			134.7		
LOS	C	D		C	F			F			F		
Approach Delay (s/veh)		40.2			123.9			86.3			134.7		
Approach LOS		D			F			F			F		
Queue Length 50th (ft)	2	340		6	~789			157			~266		
Queue Length 95th (ft)	15	#711		27	#1341			#302			#431		
Internal Link Dist (ft)		541			1292			401			319		
Turn Bay Length (ft)	100			100									
Base Capacity (vph)	52	722		225	730			246			279		
Starvation Cap Reductn	0	0		0	0			0			0		
Spillback Cap Reductn	0	0		0	0			0			0		
Storage Cap Reductn	0	0		0	0			0			0		
Reduced v/c Ratio	0.10	0.77		0.07	1.18			0.82			1.10		

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 134.2

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.18

Intersection Signal Delay (s/veh): 97.6

Intersection LOS: F

Intersection Capacity Utilization 71.5%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: School St/Orne St & North St

 Ø2	 Ø6	 Ø4	 Ø9
28 s	28 s	69 s	25 s
		 Ø8	
		69 s	

Lane Group	SET	SER	NWL	NWT	NEL	NER	Ø4	Ø9
Lane Configurations								
Traffic Volume (vph)	715	30	295	740	0	175		
Future Volume (vph)	715	30	295	740	0	175		
Satd. Flow (prot)	1463	0	1413	1487	0	1286		
Flt Permitted			0.950					
Satd. Flow (perm)	1463	0	1413	1487	0	1236		
Satd. Flow (RTOR)								
Lane Group Flow (vph)	776	0	321	804	0	219		
Turn Type	NA		Prot	NA		pm+ov		
Protected Phases	6		5	2		5	4	9
Permitted Phases						4		
Total Split (s)	35.0		25.0	60.0		25.0	23.0	26.0
Total Lost Time (s)	4.0		5.0	4.0		5.0		
Act Effct Green (s)	32.0		20.6	60.6		20.6		
Actuated g/C Ratio	0.45		0.29	0.86		0.29		
v/c Ratio	1.17		0.78	0.63		0.58		
Control Delay (s/veh)	115.0		42.1	10.1		32.8		
Queue Delay	0.0		0.0	0.0		0.0		
Total Delay (s/veh)	115.0		42.1	10.1		32.8		
LOS	F		D	B		C		
Approach Delay (s/veh)	115.0			19.2	32.8			
Approach LOS	F			B	C			
Queue Length 50th (ft)	~280		98	0		62		
Queue Length 95th (ft)	#799		#338	#582		#167		
Internal Link Dist (ft)	1292			252	419			
Turn Bay Length (ft)								
Base Capacity (vph)	664		414	1279		376		
Starvation Cap Reductn	0		0	0		0		
Spillback Cap Reductn	0		0	0		0		
Storage Cap Reductn	0		0	0		0		
Reduced v/c Ratio	1.17		0.78	0.63		0.58		

Intersection Summary

Cycle Length: 109

Actuated Cycle Length: 70.4

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.17

Intersection Signal Delay (s/veh): 55.7

Intersection LOS: E

Intersection Capacity Utilization 83.3%

ICU Level of Service E

Analysis Period (min) 15

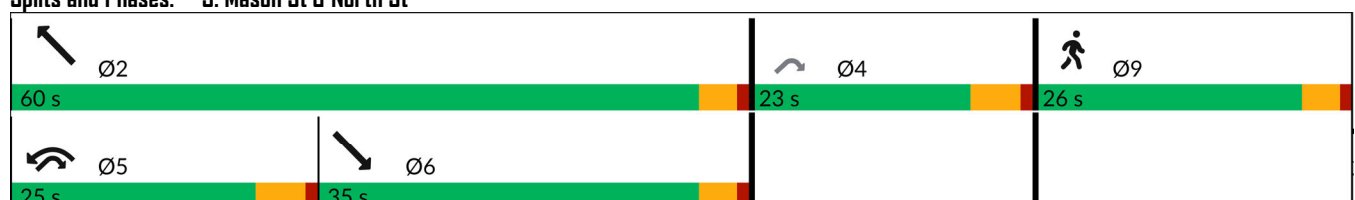
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Mason St & North St



													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	100	120	35	0	0	0	0	550	35	110	480	55	
Future Volume (vph)	100	120	35	0	0	0	0	550	35	110	480	55	
Satd. Flow (prot)	0	1365	1356	0	0	0	0	1382	0	1501	1356	0	
Flt Permitted		0.978								0.217			
Satd. Flow (perm)	0	1365	1270	0	0	0	0	1382	0	343	1356	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	0	242	38	0	0	0	0	597	0	111	541	0	
Turn Type	Split	NA	Perm					NA		pm+pt	NA		
Protected Phases	4	4						2		1	6		9
Permitted Phases			4							6			
Total Split (s)	25.0	25.0	25.0					50.0		20.0	70.0		35.0
Total Lost Time (s)		5.0	5.0					5.0		4.0	5.0		
Act Effct Green (s)		20.0	20.0					62.1		77.8	76.8		
Actuated g/C Ratio		0.15	0.15					0.48		0.60	0.59		
v/c Ratio		1.15	0.19					0.91		0.37	0.68		
Control Delay (s/veh)		157.5	51.0					53.1		20.1	24.2		
Queue Delay		0.0	0.0					1.5		0.0	0.0		
Total Delay (s/veh)		157.5	51.0					54.6		20.1	24.2		
LOS		F	D					D		C	C		
Approach Delay (s/veh)		143.0						54.6			23.5		
Approach LOS		F						D			C		
Queue Length 50th (ft)		~240	28					490		23	143		
Queue Length 95th (ft)		#410	63					#798		m54	314		
Internal Link Dist (ft)		473			358			431			307		
Turn Bay Length (ft)			75										
Base Capacity (vph)		210	195					659		347	801		
Starvation Cap Reductn		0	0					0		0	0		
Spillback Cap Reductn		0	0					14		0	0		
Storage Cap Reductn		0	0					0		0	0		
Reduced v/c Ratio		1.15	0.19					0.93		0.32	0.68		

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.15

Intersection Signal Delay (s/veh): 57.5

Intersection LOS: E

Intersection Capacity Utilization 73.2%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: North St & Essex St

Ø1 20 s	Ø2 (R) 50 s	Ø4 25 s	Ø9 35 s
Ø6 (R) 70 s			

9: Washington St & Norman St/New Derby St
Seth

2040 No Build AM
10/05/2025

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	30	185	190	65	225	75	250	600	165	65	200	70	
Future Volume (vph)	30	185	190	65	225	75	250	600	165	65	200	70	
Satd. Flow (prot)	1662	1749	1487	1501	1504	0	1516	3031	1356	1678	1766	1501	
Flt Permitted	0.950			0.950			0.950			0.950			
Satd. Flow (perm)	1662	1749	1416	1501	1504	0	1516	3031	1269	1678	1766	1381	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	35	218	224	76	349	0	278	667	183	71	217	76	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	
Protected Phases	7	4		3	8		5	2		1	6		9
Permitted Phases			4						2			6	
Total Split (s)	20.0	35.0	35.0	20.0	35.0		30.0	45.0	45.0	20.0	35.0	35.0	30.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	
Act Effct Green (s)	8.7	29.9	29.9	11.4	32.4		25.3	40.7	40.7	10.9	22.3	22.3	
Actuated g/C Ratio	0.07	0.23	0.23	0.09	0.25		0.19	0.31	0.31	0.08	0.17	0.17	
v/c Ratio	0.32	0.55	0.70	0.59	0.95		0.96	0.71	0.47	0.52	0.73	0.33	
Control Delay (s/veh)	73.7	57.5	65.7	82.9	87.9		99.6	51.2	49.3	78.0	69.4	56.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	73.7	57.5	65.7	82.9	87.9		99.6	51.2	49.3	78.0	69.4	56.3	
LOS	E	E	E	F	F		F	D	D	E	E	E	
Approach Delay (s/veh)		62.5			87.0			62.8			68.3		
Approach LOS		E			F			E			E		
Queue Length 50th (ft)	33	192	206	71	~352		~303	316	150	66	195	64	
Queue Length 95th (ft)	68	273	#317	124	#555		#507	408	242	122	291	116	
Internal Link Dist (ft)		193			332			528			749		
Turn Bay Length (ft)	100		150				200		200	200		200	
Base Capacity (vph)	185	404	327	167	368		290	959	401	187	408	319	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Reduced v/c Ratio	0.19	0.54	0.69	0.46	0.95		0.96	0.70	0.46	0.38	0.53	0.24	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 132.2

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay (s/veh): 67.9

Intersection LOS: E

Intersection Capacity Utilization 69.8%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 9: Washington St & Norman St/New Derby St

				
Ø1	Ø2	Ø3	Ø4	Ø9
20 s	45 s	20 s	35 s	30 s
				
Ø5	Ø6	Ø7	Ø8	
30 s	35 s	20 s	35 s	

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	145	255	260	20	190	270	135	580	20	145	285	35	
Future Volume (vph)	145	255	260	20	190	270	135	580	20	145	285	35	
Satd. Flow (prot)	1694	1783	1516	0	1774	1516	1711	3396	0	1694	1783	1516	
Flt Permitted	0.950				0.931		0.950			0.950			
Satd. Flow (perm)	1694	1783	1436	0	1660	1445	1711	3396	0	1694	1783	1430	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	167	293	299	0	226	290	147	652	0	161	317	39	
Turn Type	Prot	NA	pm+ov	Perm	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	
Protected Phases	7	4	5		8	1	5	2		1	6	7	9
Permitted Phases			4	8		8						6	
Total Split (s)	20.0	45.0	15.0	25.0	25.0	15.0	15.0	35.0		15.0	35.0	20.0	35.0
Total Lost Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0	
Act Effct Green (s)	13.4	39.0	47.2		18.5	26.7	8.2	26.3		8.2	26.3	39.6	
Actuated g/C Ratio	0.11	0.32	0.39		0.15	0.22	0.07	0.22		0.07	0.22	0.33	
v/c Ratio	0.90	0.51	0.53		0.90	0.90	1.27	0.89		1.40	0.82	0.08	
Control Delay (s/veh)	99.9	40.6	25.2		88.7	62.4	220.0	62.3		268.0	65.0	27.5	
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay (s/veh)	99.9	40.6	25.2		88.7	62.4	220.0	62.3		268.0	65.0	27.5	
LOS	F	D	C		F	E	F	E		F	E	C	
Approach Delay (s/veh)		47.6			73.9			91.3			125.4		
Approach LOS		D			E			F			F		
Queue Length 50th (ft)	143	209	114		193	158	~165	283		~191	257	21	
Queue Length 95th (ft)	#277	292	191		#359	#343	#305	#387		#336	#406	47	
Internal Link Dist (ft)		253			828			250			528		
Turn Bay Length (ft)						300	300						
Base Capacity (vph)	186	574	565		252	323	116	805		115	423	477	
Starvation Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Storage Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Reduced v/c Ratio	0.90	0.51	0.53		0.90	0.90	1.27	0.81		1.40	0.75	0.08	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 121.2

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.40

Intersection Signal Delay (s/veh): 81.8

Intersection LOS: F

Intersection Capacity Utilization 72.6%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Canal St & Mill St & Washington St

			
Ø1	Ø2	Ø4	Ø9
15 s	35 s	45 s	35 s
			
Ø5	Ø6	Ø7	Ø8
15 s	35 s	20 s	25 s

														
Lane Group	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SER	SWL2	SWL	SWR	SWR2	Ø9
Lane Configurations														
Traffic Volume (vph)	355	305	5	35	5	10	290	5	335	5	5	5	5	
Future Volume (vph)	355	305	5	35	5	10	290	5	335	5	5	5	5	
Satd. Flow (prot)	1678	1513	0	0	0	1646	1511	0	1528	0	1621	0	0	
Flt Permitted	0.324					0.950					0.976			
Satd. Flow (perm)	572	1513	0	0	0	1646	1511	0	1431	0	1621	0	0	
Satd. Flow (RTOR)									*100					
Lane Group Flow (vph)	394	384	0	0	0	18	347	0	409	0	20	0	0	
Turn Type	pm+pt	NA			Prot	Prot	NA		Perm	Prot	Prot			
Protected Phases	5	2			1	1	6			7	7			9
Permitted Phases	2								4					
Total Split (s)	22.0	40.0			16.0	16.0	34.0		23.0	13.0	13.0			24.0
Total Lost Time (s)	4.0	8.0				8.0	8.0		5.0		7.5			
Act Effct Green (s)	53.6	44.0				8.2	26.8		18.6		5.7			
Actuated g/C Ratio	0.54	0.45				0.08	0.27		0.19		0.06			
v/c Ratio	0.76	0.57				0.13	0.85		1.17		0.22			
Control Delay (s/veh)	30.3	32.4				51.6	57.6		132.0		57.3			
Queue Delay	0.0	0.0				0.0	0.0		0.0		0.0			
Total Delay (s/veh)	30.3	32.4				51.6	57.6		132.0		57.3			
LOS	C	C				D	E		F		E			
Approach Delay (s/veh)		31.3					57.3				57.3			
Approach LOS		C					E				E			
Queue Length 50th (ft)	161	175				11	222		~277		13			
Queue Length 95th (ft)	#338	#466				35	#421		#456		41			
Internal Link Dist (ft)		285					738				98			
Turn Bay Length (ft)	200					200								
Base Capacity (vph)	519	675				137	410		350		92			
Starvation Cap Reductn	0	0				0	0		0		0			
Spillback Cap Reductn	0	0				0	0		0		0			
Storage Cap Reductn	0	0				0	0		0		0			
Reduced v/c Ratio	0.76	0.57				0.13	0.85		1.17		0.22			

Intersection Summary

Cycle Length: 116

Actuated Cycle Length: 98.6

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.17

Intersection Signal Delay (s/veh): 63.9

Intersection LOS: E

Intersection Capacity Utilization 65.2%

ICU Level of Service C

Analysis Period (min) 15

* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 11: Lafayette St & Dow St & Washington St

	Ø1		Ø2		Ø4		Ø7		Ø9
16 s		40 s		23 s		13 s		24 s	
	Ø5		Ø6						
22 s		34 s							

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	5	25	5	5	20	15	725	10	5	515	15
Future Volume (vph)	20	5	25	5	5	20	15	725	10	5	515	15
Satd. Flow (prot)	0	1353	0	0	1380	0	0	1525	0	0	1506	0
Flt Permitted		0.906			0.965			0.988			0.994	
Satd. Flow (perm)	0	1239	0	0	1337	0	0	1508	0	0	1499	0
Satd. Flow (RTOR)								2			5	
Lane Group Flow (vph)	0	56	0	0	41	0	0	772	0	0	595	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Total Split (s)	18.0	18.0		18.0	18.0		42.0	42.0		42.0	42.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Act Effct Green (s)		13.3			13.3			30.9			30.9	
Actuated g/C Ratio		0.25			0.25			0.59			0.59	
v/c Ratio		0.18			0.12			0.87			0.67	
Control Delay (s/veh)		19.9			19.1			21.1			11.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay (s/veh)		19.9			19.1			21.1			11.2	
LOS		B			B			C			B	
Approach Delay (s/veh)		19.9			19.1			21.1			11.2	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)		15			11			165			102	
Queue Length 95th (ft)		43			27			#406			186	
Internal Link Dist (ft)		657			627			413			957	
Turn Bay Length (ft)												
Base Capacity (vph)		338			365			1119			1113	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.17			0.11			0.69			0.53	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 52.3

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.87

Intersection Signal Delay (s/veh): 17.0

Intersection LOS: B

Intersection Capacity Utilization 65.7%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 15: Lafayette St & Ocean St

Ø2 42 s	Ø4 18 s
Ø6 42 s	Ø8 18 s

No Growth
Seth

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	180	10	110	15	30	20	175	610	10	5	410	135	
Future Volume (vph)	180	10	110	15	30	20	175	610	10	5	410	135	
Satd. Flow (prot)	0	1421	1446	0	1535	1516	1711	1572	0	0	1515	1473	
Flt Permitted		0.700			0.984		0.950				0.993		
Satd. Flow (perm)	0	1042	1446	0	1535	1516	1711	1572	0	0	1506	1473	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	0	218	126	0	51	23	179	632	0	0	494	161	
Turn Type	Perm	NA	pt+ov	Split	NA	Prot	Prot	NA		Perm	NA	custom	
Protected Phases		4	4 5	3	3	3	5	2			6	4	9
Permitted Phases	4									6		6	
Total Split (s)	28.0	28.0		15.0	15.0	15.0	19.0	69.0		50.0	50.0	28.0	28.0
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0			5.0	5.0	
Act Effct Green (s)		23.6	40.3		8.7	8.7	14.3	65.5			46.0	70.9	
Actuated g/C Ratio		0.19	0.32		0.07	0.07	0.11	0.52			0.37	0.57	
v/c Ratio		1.11	0.27		0.48	0.22	0.91	0.77			0.89	0.19	
Control Delay (s/veh)		146.3	24.8		76.6	65.8	102.8	36.1			60.5	11.3	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0	
Total Delay (s/veh)		146.3	24.8		76.6	65.8	102.8	36.1			60.5	11.3	
LOS		F	C		E	E	F	D			E	B	
Approach Delay (s/veh)		101.8			73.2			50.8			48.4		
Approach LOS		F			E			D			D		
Queue Length 50th (ft)		~250	61		45	20	~177	514			~476	58	
Queue Length 95th (ft)		#399	98		89	49	#333	#753			#620	84	
Internal Link Dist (ft)		770			537			1056			584		
Turn Bay Length (ft)			300			300	300					300	
Base Capacity (vph)		196	465		125	124	196	822			554	833	
Starvation Cap Reductn		0	0		0	0	0	0			0	0	
Spillback Cap Reductn		0	0		0	0	0	0			0	0	
Storage Cap Reductn		0	0		0	0	0	0			0	0	
Reduced v/c Ratio		1.11	0.27		0.41	0.19	0.91	0.77			0.89	0.19	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 125.3

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay (s/veh): 60.2

Intersection LOS: E

Intersection Capacity Utilization 84.2%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 16: Lafayette St & Loring Ave/West St

Ø2 69 s		Ø3 15 s	Ø4 28 s	Ø9 28 s
Ø5 19 s	Ø6 50 s			

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations											 		
Traffic Volume (vph)	20	0	70	10	25	115	85	610	0	0	590	290	
Future Volume (vph)	20	0	70	10	25	115	85	610	0	0	590	290	
Satd. Flow (prot)	1516	0	1356	0	1366	0	1516	1595	0	0	2844	0	
Flt Permitted	0.950				0.997		0.155						
Satd. Flow (perm)	1516	0	1296	0	1366	0	247	1595	0	0	2844	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	22	0	76	0	163	0	88	629	0	0	910	0	
Turn Type	Prot		pm+ov	Split	NA		pm+pt	NA			NA		
Protected Phases	7		5	8	8		5	2			6		9
Permitted Phases			7				2						
Total Split (s)	20.0		20.0	20.0	20.0		20.0	63.0			43.0		27.0
Total Lost Time (s)	6.0		6.0		6.0		6.0	6.0			6.0		
Act Effct Green (s)	7.9		15.6		22.1		71.0	71.0			54.5		
Actuated g/C Ratio	0.06		0.12		0.17		0.55	0.55			0.42		
v/c Ratio	0.24		0.48		0.71		0.37	0.72			0.76		
Control Delay (s/veh)	64.0		40.7		69.0		29.5	31.0			41.1		
Queue Delay	0.0		0.0		0.0		0.0	0.1			0.0		
Total Delay (s/veh)	64.0		40.7		69.0		29.5	31.1			41.1		
LOS	E		D		E		C	C			D		
Approach Delay (s/veh)		45.9			69.0			30.9			41.1		
Approach LOS		D			E			C			D		
Queue Length 50th (ft)	18		30		133		41	304			~412		
Queue Length 95th (ft)	47		54		#267		m51	m357			#594		
Internal Link Dist (ft)		297			159			120			231		
Turn Bay Length (ft)			100										
Base Capacity (vph)	163		197		231		271	870			1192		
Starvation Cap Reductn	0		0		0		0	10			0		
Spillback Cap Reductn	0		0		0		0	0			0		
Storage Cap Reductn	0		0		0		0	0			0		
Reduced v/c Ratio	0.13		0.39		0.71		0.32	0.73			0.76		

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay (s/veh): 39.9

Intersection LOS: D

Intersection Capacity Utilization 67.9%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: North St & Rte 107 ramp to Rte 114/Federal St

	Ø2 (R)			Ø7		Ø8		Ø9
63 s			20 s		20 s		27 s	
	Ø5			Ø6 (R)				
20 s			43 s					

Intersection												
Int Delay, s/veh	6.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕						↕		
Traffic Vol, veh/h	55	550	15	0	850	25	0	0	0	15	40	130
Future Vol, veh/h	55	550	15	0	850	25	0	0	0	15	40	130
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
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	93	93	93	95	95	95	92	92	92	90	90	90
Heavy Vehicles, %	5	5	5	3	3	3	2	2	2	1	1	1
Mvmt Flow	59	591	16	0	895	26	0	0	0	17	44	144
Major/Minor	Major1		Major2				Minor2					
Conflicting Flow All	931	0	0	618	0	0				1638	1654	928
Stage 1	-	-	-	-	-	-				918	918	-
Stage 2	-	-	-	-	-	-				720	736	-
Critical Hdwy	4.15	-	-	4.13	-	-				6.41	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-				5.41	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.41	5.51	-
Follow-up Hdwy	2.245	-	-	2.227	-	-				3.509	4.009	3.309
Pot Cap-1 Maneuver	723	-	-	958	-	-				111	99	326
Stage 1	-	-	-	-	-	-				391	352	-
Stage 2	-	-	-	-	-	-				484	427	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	716	-	-	958	-	-				96	0	321
Mov Cap-2 Maneuver	-	-	-	-	-	-				96	0	-
Stage 1	-	-	-	-	-	-				339	0	-
Stage 2	-	-	-	-	-	-				480	0	-
Approach	EB			WB			SB					
HCM Ctrl Dly, s/v	0.93			0			57.53					
HCM LOS							F					
Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1					
Capacity (veh/h)	159	-	-	958	-	-	258					
HCM Lane V/C Ratio	0.083	-	-	-	-	-	0.797					
HCM Ctrl Dly (s/v)	10.5	0	-	0	-	-	57.5					
HCM Lane LOS	B	A	-	A	-	-	F					
HCM 95th %tile Q(veh)	0.3	-	-	0	-	-	6.1					

Intersection										
Int Delay, s/veh	1.3									
Movement	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations										
Traffic Vol, veh/h	0	20	20	852	20	40	1000	160	0	0
Future Vol, veh/h	0	20	20	852	20	40	1000	160	0	0
Conflicting Peds, #/hr	0	5	20	0	10	0	0	20	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	-	None	-	-
Storage Length	0	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	92	92	91	91	91	92	92	92	92	92
Heavy Vehicles, %	2	2	3	3	3	3	3	3	3	3
Mvmt Flow	0	22	22	936	22	43	1087	174	0	0

Major/Minor	Minor1		Major1		Major2			Minor2	
Conflicting Flow All	1652	962	1281	0	0	968	0	0	670
Stage 1	1001	-	-	-	-	-	-	-	-
Stage 2	650	-	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.23	4.145	-	-	4.145	-	-	6.945
Critical Hdwy Stg 1	6.13	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.2285	-	-	2.2285	-	-	3.3285
Pot Cap-1 Maneuver	71	309	535	-	-	704	-	-	398
Stage 1	292	-	-	-	-	-	-	-	0
Stage 2	425	-	-	-	-	-	-	-	0
Platoon blocked, %				-	-	-	-		
Mov Cap-1 Maneuver	54	305	526	-	-	698	-	-	384
Mov Cap-2 Maneuver	54	-	-	-	-	-	-	-	-
Stage 1	263	-	-	-	-	-	-	-	-
Stage 2	356	-	-	-	-	-	-	-	-

Approach	EB	SE	NW	SW
HCM Ctrl Dly, s/v	32.46	0.27	1.14	14.93
HCM LOS	D			B

Minor Lane/Major Mvmt	NWL	NWT	NWR	EBLnI	SEL	SET	SER	SWLnI
Capacity (veh/h)	101	-	-	158	40	-	-	384
HCM Lane V/C Ratio	0.062	-	-	0.172	0.042	-	-	0.057
HCM Ctrl Dly (s/v)	10.5	0.9	-	32.5	12.1	0	-	14.9
HCM Lane LOS	B	A	-	D	B	A	-	B
HCM 95th %tile Q(veh)	0.2	-	-	0.6	0.1	-	-	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	0	5	10	5	70	0	635	0	0	630	5
Future Vol, veh/h	5	0	5	10	5	70	0	635	0	0	630	5
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
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	84	84	84	84	84	84	97	97	97	94	94	94
Heavy Vehicles, %	4	4	4	2	2	2	3	3	3	4	4	4
Mvmt Flow	6	0	6	12	6	83	0	655	0	0	670	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1350	1338	358	1000	1340	665	686	0	-	-	-	0
Stage 1	683	683	-	655	655	-	-	-	-	-	-	-
Stage 2	668	655	-	345	686	-	-	-	-	-	-	-
Critical Hdwy	7.36	6.56	6.96	7.33	6.53	6.23	4.145	-	-	-	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.16	5.56	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.538	4.038	3.338	3.519	4.019	3.319	2.2285	-	-	-	-	-
Pot Cap-1 Maneuver	116	150	635	209	152	459	900	-	0	0	-	-
Stage 1	402	444	-	454	462	-	-	-	0	0	-	-
Stage 2	443	458	-	644	447	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	90	149	624	206	151	455	892	-	-	-	-	-
Mov Cap-2 Maneuver	90	149	-	206	151	-	-	-	-	-	-	-
Stage 1	399	441	-	454	462	-	-	-	-	-	-	-
Stage 2	354	458	-	633	443	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	29.86		18.82		0		0	
HCM LOS	D		C					

Minor Lane/Major Mvmt	NBL	NBT	EBLnI	WBLnI	SBT	SBR
Capacity (veh/h)	892	-	157	361	-	-
HCM Lane V/C Ratio	-	-	0.076	0.28	-	-
HCM Ctrl Dly (s/v)	0	-	29.9	18.8	-	-
HCM Lane LOS	A	-	D	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	1.1	-	-

Intersection												
Int Delay, s/veh	18											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	5	75	0	90	5	665	0	0	590	5
Future Vol, veh/h	5	0	5	75	0	90	5	665	0	0	590	5
Conflicting Peds, #/hr	20	0	20	20	0	20	20	0	20	20	0	20
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	88	92	88	92	87	87	89	89	92
Heavy Vehicles, %	2	2	2	4	4	4	2	4	4	5	5	2
Mvmt Flow	5	0	5	85	0	102	5	764	0	0	663	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1481	1461	706	1458	1464	784	688	0	-	-	-	0
Stage 1	686	686	-	775	775	-	-	-	-	-	-	-
Stage 2	795	775	-	683	688	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.14	6.54	6.24	4.12	-	-	-	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.536	4.036	3.336	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	104	129	436	106	127	390	906	-	0	0	-	-
Stage 1	438	448	-	388	405	-	-	-	0	0	-	-
Stage 2	381	408	-	436	444	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	72	125	421	102	124	383	890	-	-	-	-	-
Mov Cap-2 Maneuver	72	125	-	102	124	-	-	-	-	-	-	-
Stage 1	430	440	-	384	401	-	-	-	-	-	-	-
Stage 2	271	403	-	423	436	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	36.9		154.45		0.06		0	
HCM LOS	E		F					

Minor Lane/Major Mvmt	NBL	NBT	EBLnI	WBLnI	SBT	SBR
Capacity (veh/h)	13	-	124	170	-	-
HCM Lane V/C Ratio	0.006	-	0.088	1.103	-	-
HCM Ctrl Dly (s/v)	9.1	0	36.9	154.5	-	-
HCM Lane LOS	A	A	E	F	-	-
HCM 95th %tile Q(veh)	0	-	0.3	9.6	-	-

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	30	5	0	0	0	5	570	250	110	610	10	
Future Vol, veh/h	5	30	5	0	0	0	5	570	250	110	610	10	
Conflicting Peds, #/hr	10	0	10	10	0	10	20	0	50	50	0	20	
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	82	82	82	92	92	92	95	95	95	91	91	91	
Heavy Vehicles, %	4	4	4	0	0	0	3	3	3	5	5	5	
Mvmt Flow	6	37	6	0	0	0	5	600	263	121	670	11	
Major/Minor	Minor2						Major1		Major2				
Conflicting Flow All	1558	1861	706				701	0	0	913	0	0	
Stage 1	938	938	-				-	-	-	-	-	-	
Stage 2	621	924	-				-	-	-	-	-	-	
Critical Hdwy	6.44	6.54	6.24				4.13	-	-	4.15	-	-	
Critical Hdwy Stg 1	5.44	5.54	-				-	-	-	-	-	-	
Critical Hdwy Stg 2	5.44	5.54	-				-	-	-	-	-	-	
Follow-up Hdwy	3.536	4.036	3.336				2.227	-	-	2.245	-	-	
Pot Cap-1 Maneuver	122	72	433				891	-	-	734	-	-	
Stage 1	378	341	-				-	-	-	-	-	-	
Stage 2	532	346	-				-	-	-	-	-	-	
Platoon blocked, %								-	-				-
Mov Cap-1 Maneuver	86	0	421				876	-	-	734	-	-	
Mov Cap-2 Maneuver	86	0	-				-	-	-	-	-	-	
Stage 1	367	0	-				-	-	-	-	-	-	
Stage 2	384	0	-				-	-	-	-	-	-	
Approach	EB						NB		SB				
HCM Ctrl Dly, s/v	42.86						0.06		1.64				
HCM LOS	E												
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLnI	SBL	SBT	SBR						
Capacity (veh/h)	10	-	-	143	270	-	-						
HCM Lane V/C Ratio	0.006	-	-	0.342	0.165	-	-						
HCM Ctrl Dly (s/v)	9.1	0	-	42.9	10.9	0	-						
HCM Lane LOS	A	A	-	E	B	A	-						
HCM 95th %tile Q(veh)	0	-	-	1.4	0.6	-	-						

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	0	5	5	0	25	5	760	15	10	525	5
Future Vol, veh/h	5	0	5	5	0	25	5	760	15	10	525	5
Conflicting Peds, #/hr	20	0	20	20	0	20	20	0	20	20	0	20
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	83	83	83	78	78	78	94	94	94	95	95	95
Heavy Vehicles, %	10	10	10	0	0	0	4	4	4	6	6	6
Mvmt Flow	6	0	6	6	0	32	5	809	16	11	553	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1435	1451	595	1441	1446	856	578	0	0	844	0	0
Stage 1	596	596	-	847	847	-	-	-	-	-	-	-
Stage 2	839	855	-	594	599	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.1	6.5	6.2	4.14	-	-	4.16	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.5	4	3.3	2.236	-	-	2.254	-	-
Pot Cap-1 Maneuver	107	126	489	112	133	360	986	-	-	775	-	-
Stage 1	476	479	-	359	381	-	-	-	-	-	-	-
Stage 2	349	364	-	495	494	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	91	118	473	103	124	348	969	-	-	761	-	-
Mov Cap-2 Maneuver	91	118	-	103	124	-	-	-	-	-	-	-
Stage 1	459	461	-	349	370	-	-	-	-	-	-	-
Stage 2	308	354	-	471	475	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	30.65	22.06	0.06	0.18
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLnI	WBLnI	SBL	SBT	SBR
Capacity (veh/h)	11	-	-	152	249	33	-	-
HCM Lane V/C Ratio	0.005	-	-	0.079	0.154	0.014	-	-
HCM Ctrl Dly (s/v)	8.7	0	-	30.6	22.1	9.8	0	-
HCM Lane LOS	A	A	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.5	0	-	-

Intersection						
Int Delay, s/veh	6.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	455	745	0	0	875
Future Vol, veh/h	0	455	745	0	0	875
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	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	474	776	0	0	911
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	388	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.33	-	-	-	-
Pot Cap-1 Maneuver	0	608	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	608	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	28.72	0		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	WBLnI	SBT			
Capacity (veh/h)	-	608	-			
HCM Lane V/C Ratio	-	0.78	-			
HCM Ctrl Dly (s/v)	-	28.7	-			
HCM Lane LOS	-	D	-			
HCM 95th %tile Q(veh)	-	7.4	-			

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	0	5	5	0	25	5	760	15	10	525	5
Future Vol, veh/h	5	0	5	5	0	25	5	760	15	10	525	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	83	83	83	78	78	78	94	94	94	95	95	95
Heavy Vehicles, %	10	10	10	0	0	0	4	4	4	6	6	6
Mvmt Flow	6	0	6	6	0	32	5	809	16	11	553	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1395	1411	555	1401	1406	816	558	0	0	824	0	0
Stage 1	576	576	-	827	827	-	-	-	-	-	-	-
Stage 2	819	835	-	574	579	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.1	6.5	6.2	4.14	-	-	4.16	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.5	4	3.3	2.236	-	-	2.254	-	-
Pot Cap-1 Maneuver	114	133	516	119	140	380	1003	-	-	789	-	-
Stage 1	489	489	-	369	389	-	-	-	-	-	-	-
Stage 2	358	372	-	508	504	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	101	129	516	114	136	380	1003	-	-	789	-	-
Mov Cap-2 Maneuver	101	129	-	114	136	-	-	-	-	-	-	-
Stage 1	479	480	-	365	385	-	-	-	-	-	-	-
Stage 2	325	368	-	492	494	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	27.87		20.3		0.06		0.18					
HCM LOS	D		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLnI	WBLnI	SBL	SBT	SBR				
Capacity (veh/h)	11	-	-	169	274	33	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.071	0.141	0.013	-	-				
HCM Ctrl Dly (s/v)	8.6	0	-	27.9	20.3	9.6	0	-				
HCM Lane LOS	A	A	-	D	C	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.5	0	-	-				

Part 4: 2040 No Build Conditions: Weekday PM Peak-Hour LOS and Delays

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	10	610	25	15	705	35	70	60	30	135	130	20	
Future Volume (vph)	10	610	25	15	705	35	70	60	30	135	130	20	
Satd. Flow (prot)	1711	1564	0	1711	1562	0	0	1495	0	0	1753	0	
Flt Permitted	0.065			0.131				0.979			0.977		
Satd. Flow (perm)	117	1564	0	236	1562	0	0	1495	0	0	1753	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	11	690	0	16	779	0	0	188	0	0	324	0	
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA		
Protected Phases		4			8		2	2		6	6		9
Permitted Phases	4			8									
Total Split (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0		25.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0			6.0		
Act Effct Green (s)	61.8	61.8		61.8	61.8			20.4			23.3		
Actuated g/C Ratio	0.45	0.45		0.45	0.45			0.15			0.17		
v/c Ratio	0.21	0.98		0.15	1.11			0.85			1.09		
Control Delay (s/veh)	42.3	68.7		32.7	104.6			90.3			131.7		
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0		
Total Delay (s/veh)	42.3	68.7		32.7	104.6			90.3			131.7		
LOS	D	E		C	F			F			F		
Approach Delay (s/veh)		68.3			103.2			90.3			131.7		
Approach LOS		E			F			F			F		
Queue Length 50th (ft)	7	~755		10	~936			181			~385		
Queue Length 95th (ft)	28	#1002		30	#1190			#281			#565		
Internal Link Dist (ft)		541			1292			401			319		
Turn Bay Length (ft)	100			100									
Base Capacity (vph)	52	703		105	702			253			297		
Starvation Cap Reductn	0	0		0	0			0			0		
Spillback Cap Reductn	0	0		0	0			0			0		
Storage Cap Reductn	0	0		0	0			0			0		
Reduced v/c Ratio	0.21	0.98		0.15	1.11			0.74			1.09		

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 137.5

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay (s/veh): 94.4

Intersection LOS: F

Intersection Capacity Utilization 69.8%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: School St/Orne St & North St

 Ø2	 Ø6	 Ø4	 Ø9
29 s	29 s	67 s	25 s
		 Ø8	
		67 s	

3: Mason St & North St
Seth

2040 No Build PM
10/05/2025

Lane Group	SET	SER	NWL	NWT	NEL	NER	Ø4	Ø9
Lane Configurations								
Traffic Volume (vph)	750	30	445	715	0	170		
Future Volume (vph)	750	30	445	715	0	170		
Satd. Flow (prot)	1506	0	1441	1516	0	1312		
Flt Permitted			0.950					
Satd. Flow (perm)	1506	0	1441	1516	0	1260		
Satd. Flow (RTOR)								
Lane Group Flow (vph)	848	0	468	753	0	200		
Turn Type	NA		Prot	NA		pm+ov		
Protected Phases	6		5	2		5	4	9
Permitted Phases						4		
Total Split (s)	35.0		25.0	60.0		25.0	23.0	26.0
Total Lost Time (s)	4.0		5.0	4.0		5.0		
Act Effct Green (s)	32.0		20.6	60.6		20.6		
Actuated g/C Ratio	0.45		0.29	0.86		0.29		
v/c Ratio	1.24		1.11	0.58		0.52		
Control Delay (s/veh)	143.3		105.7	8.5		30.4		
Queue Delay	0.0		0.0	0.0		0.0		
Total Delay (s/veh)	143.3		105.7	8.5		30.4		
LOS	F		F	A		C		
Approach Delay (s/veh)	143.3			45.7	30.4			
Approach LOS	F			D	C			
Queue Length 50th (ft)	~357		164	0		56		
Queue Length 95th (ft)	#878		#525	413		161		
Internal Link Dist (ft)	1292			252	419			
Turn Bay Length (ft)								
Base Capacity (vph)	684		422	1304		384		
Starvation Cap Reductn	0		0	0		0		
Spillback Cap Reductn	0		0	0		0		
Storage Cap Reductn	0		0	0		0		
Reduced v/c Ratio	1.24		1.11	0.58		0.52		

Intersection Summary

Cycle Length: 109

Actuated Cycle Length: 70.4

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.24

Intersection Signal Delay (s/veh): 80.9

Intersection LOS: F

Intersection Capacity Utilization 95.4%

ICU Level of Service F

Analysis Period (min) 15

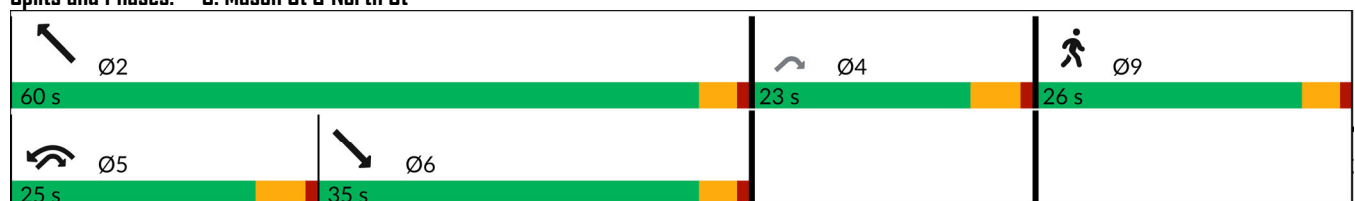
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Mason St & North St



													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	105	100	40	0	0	0	0	485	45	135	580	70	
Future Volume (vph)	105	100	40	0	0	0	0	485	45	135	580	70	
Satd. Flow (prot)	0	1374	1369	0	0	0	0	1403	0	1531	1382	0	
Flt Permitted		0.975								0.195			
Satd. Flow (perm)	0	1374	1294	0	0	0	0	1403	0	314	1382	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	0	230	45	0	0	0	0	570	0	145	699	0	
Turn Type	Split	NA	Perm					NA		pm+pt	NA		
Protected Phases	4	4						2		1	6		9
Permitted Phases			4							6			
Total Split (s)	30.0	30.0	30.0					45.0		20.0	65.0		35.0
Total Lost Time (s)		5.0	5.0					5.0		4.0	5.0		
Act Effct Green (s)		23.9	23.9					56.1		73.9	72.9		
Actuated g/C Ratio		0.18	0.18					0.43		0.57	0.56		
v/c Ratio		0.91	0.19					0.94		0.49	0.90		
Control Delay (s/veh)		89.4	46.5					63.7		32.2	42.5		
Queue Delay		0.0	0.0					1.0		0.0	0.0		
Total Delay (s/veh)		89.4	46.5					64.7		32.2	42.5		
LOS		F	D					E		C	D		
Approach Delay (s/veh)		82.4						64.7			40.8		
Approach LOS		F						E			D		
Queue Length 50th (ft)		190	32					~526		58	369		
Queue Length 95th (ft)		#331	68					#821		m88	m#721		
Internal Link Dist (ft)		473			358			431			307		
Turn Bay Length (ft)			75										
Base Capacity (vph)		264	248					605		334	774		
Starvation Cap Reductn		0	0					0		0	0		
Spillback Cap Reductn		0	0					5		0	0		
Storage Cap Reductn		0	0					0		0	0		
Reduced v/c Ratio		0.87	0.18					0.95		0.43	0.90		

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay (s/veh): 55.6

Intersection LOS: E

Intersection Capacity Utilization 70.7%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: North St & Essex St



9: Washington St & Norman St/New Derby St
Seth

2040 No Build PM
10/05/2025

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	40	215	210	90	310	55	190	440	160	80	255	70	
Future Volume (vph)	40	215	210	90	310	55	190	440	160	80	255	70	
Satd. Flow (prot)	1711	1801	1531	1531	1566	0	1531	3061	1369	1711	1801	1531	
Flt Permitted	0.950			0.950			0.950			0.950			
Satd. Flow (perm)	1711	1801	1465	1531	1566	0	1531	3061	1263	1711	1801	1411	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	45	242	236	99	401	0	200	463	168	88	280	77	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	
Protected Phases	7	4		3	8		5	2		1	6		9
Permitted Phases			4						2			6	
Total Split (s)	18.0	40.0	40.0	18.0	40.0		26.0	36.0	36.0	26.0	36.0	36.0	30.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	
Act Effct Green (s)	9.1	29.6	29.6	11.6	35.9		20.6	37.1	37.1	12.5	25.0	25.0	
Actuated g/C Ratio	0.07	0.22	0.22	0.09	0.27		0.15	0.28	0.28	0.09	0.19	0.19	
v/c Ratio	0.39	0.61	0.73	0.75	0.96		0.85	0.55	0.48	0.55	0.84	0.29	
Control Delay (s/veh)	75.6	57.0	65.6	96.8	86.3		89.2	50.0	53.8	76.2	76.3	54.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	75.6	57.0	65.6	96.8	86.3		89.2	50.0	53.8	76.2	76.3	54.1	
LOS	E	E	E	F	F		F	D	D	E	E	D	
Approach Delay (s/veh)		62.5			88.4			60.2			72.4		
Approach LOS		E			F			E			E		
Queue Length 50th (ft)	42	210	211	94	~428		191	207	140	82	256	63	
Queue Length 95th (ft)	85	305	313	#202	#666		#367	288	237	142	#393	116	
Internal Link Dist (ft)		193			332			528			749		
Turn Bay Length (ft)	100		150				200		200	200		200	
Base Capacity (vph)	160	479	390	143	419		239	848	349	267	422	331	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Reduced v/c Ratio	0.28	0.51	0.61	0.69	0.96		0.84	0.55	0.48	0.33	0.66	0.23	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 134

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay (s/veh): 69.2

Intersection LOS: E

Intersection Capacity Utilization 72.4%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 9: Washington St & Norman St/New Derby St

	Ø1		Ø2		Ø3		Ø4		Ø9
26 s		36 s		18 s		40 s		30 s	
	Ø5		Ø6		Ø7		Ø8		
26 s		36 s		18 s		40 s			

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	155	260	370	15	200	250	130	445	45	140	370	30	
Future Volume (vph)	155	260	370	15	200	250	130	445	45	140	370	30	
Satd. Flow (prot)	1711	1801	1531	0	1761	1501	1694	3316	0	1728	1818	1546	
Flt Permitted	0.950				0.955		0.950			0.950			
Satd. Flow (perm)	1711	1801	1453	0	1687	1436	1694	3316	0	1728	1818	1454	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	161	271	385	0	250	291	148	557	0	152	402	33	
Turn Type	Prot	NA	pm+av	Perm	NA	pm+av	Prot	NA		Prot	NA	pm+av	
Protected Phases	7	4	5		8	1	5	2		1	6	7	9
Permitted Phases			4	8		8						6	
Total Split (s)	20.0	45.0	18.0	25.0	25.0	18.0	18.0	32.0		18.0	32.0	20.0	35.0
Total Lost Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0	
Act Effct Green (s)	13.2	38.6	49.8		18.3	29.5	11.2	25.4		11.2	25.4	38.6	
Actuated g/C Ratio	0.11	0.31	0.40		0.15	0.24	0.09	0.21		0.09	0.21	0.31	
v/c Ratio	0.88	0.48	0.65		1.00	0.83	0.96	0.81		0.97	1.07	0.07	
Control Delay (s/veh)	97.0	40.1	27.2		110.9	48.1	121.4	58.9		122.1	114.7	29.3	
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay (s/veh)	97.0	40.1	27.2		110.9	48.1	121.4	58.9		122.1	114.7	29.3	
LOS	F	D	C		F	D	F	E		F	F	C	
Approach Delay (s/veh)		45.2			77.1			72.1			111.8		
Approach LOS		D			E			E			F		
Queue Length 50th (ft)	137	191	146		~233	133	~134	242		~138	~398	19	
Queue Length 95th (ft)	#277	281	255		#379	#260	#265	#323		#280	#601	43	
Internal Link Dist (ft)		253			828			250			528		
Turn Bay Length (ft)						300	300						
Base Capacity (vph)	184	565	595		250	349	154	684		157	375	466	
Starvation Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Storage Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Reduced v/c Ratio	0.88	0.48	0.65		1.00	0.83	0.96	0.81		0.97	1.07	0.07	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 123

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.07

Intersection Signal Delay (s/veh): 73.6

Intersection LOS: E

Intersection Capacity Utilization 75.0%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Canal St & Mill St & Washington St

 Ø1	 Ø2	 Ø4	 Ø9
18 s	32 s	45 s	35 s
 Ø5	 Ø6	 Ø7	 Ø8
18 s	32 s	20 s	25 s

														
Lane Group	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SER	SWL2	SWL	SWR	SWR2	Ø9
Lane Configurations														
Traffic Volume (vph)	330	280	10	30	25	40	420	10	345	5	10	5	5	
Future Volume (vph)	330	280	10	30	25	40	420	10	345	5	10	5	5	
Satd. Flow (prot)	1678	1511	0	0	0	1728	1584	0	1558	0	1578	0	0	
Flt Permitted	0.175					0.950					0.971			
Satd. Flow (perm)	309	1511	0	0	0	1728	1584	0	1455	0	1578	0	0	
Satd. Flow (RTOR)									*100					
Lane Group Flow (vph)	351	341	0	0	0	68	453	0	401	0	25	0	0	
Turn Type	pm+pt	NA			Prot	Prot	NA		Perm	Prot	Prot			
Protected Phases	5	2			1	1	6			7	7			9
Permitted Phases	2								4					
Total Split (s)	22.0	44.0			16.0	16.0	38.0		23.0	17.0	17.0			24.0
Total Lost Time (s)	6.0	8.0				8.0	8.0		5.0		7.5			
Act Effct Green (s)	56.0	41.5				8.3	31.1		18.7		7.3			
Actuated g/C Ratio	0.52	0.39				0.08	0.29		0.17		0.07			
v/c Ratio	0.94	0.58				0.51	0.98		1.19		0.23			
Control Delay (s/veh)	58.8	38.1				67.5	79.6		143.4		58.6			
Queue Delay	0.0	0.0				0.0	0.0		0.0		0.0			
Total Delay (s/veh)	58.8	38.1				67.5	79.6		143.4		58.6			
LOS	E	D				E	E		F		E			
Approach Delay (s/veh)		48.6					78.0				58.6			
Approach LOS		D					E				E			
Queue Length 50th (ft)	~235	244				53	~422		~341		19			
Queue Length 95th (ft)	#439	#393				#119	#644		#513		49			
Internal Link Dist (ft)		285					738				98			
Turn Bay Length (ft)	200					200								
Base Capacity (vph)	374	585				134	461		336		145			
Starvation Cap Reductn	0	0				0	0		0		0			
Spillback Cap Reductn	0	0				0	0		0		0			
Storage Cap Reductn	0	0				0	0		0		0			
Reduced v/c Ratio	0.94	0.58				0.51	0.98		1.19		0.17			

Intersection Summary

Cycle Length: 124

Actuated Cycle Length: 106.9

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.19

Intersection Signal Delay (s/veh): 81.3

Intersection LOS: F

Intersection Capacity Utilization 72.6%

ICU Level of Service C

Analysis Period (min) 15

* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 11: Lafayette St & Dow St & Washington St

	Ø1		Ø2		Ø4		Ø7		Ø9
16 s		44 s		23 s		17 s		24 s	
	Ø5		Ø6						
22 s		38 s							

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	210	25	80	25	25	10	165	560	20	5	375	180	
Future Volume (vph)	210	25	80	25	25	10	165	560	20	5	375	180	
Satd. Flow (prot)	0	1479	1501	0	1569	1561	1694	1552	0	0	1559	1516	
Flt Permitted		0.700			0.976		0.950				0.991		
Satd. Flow (perm)	0	1082	1501	0	1569	1561	1694	1552	0	0	1546	1516	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	0	294	100	0	68	14	179	631	0	0	437	207	
Turn Type	Perm	NA	pt+ov	Split	NA	Prot	Prot	NA		Perm	NA	custom	
Protected Phases		4	4 5	3	3	3	5	2			6	4	9
Permitted Phases	4									6		6	
Total Split (s)	34.0	34.0		16.0	16.0	16.0	17.0	62.0		45.0	45.0	34.0	28.0
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0			5.0	5.0	
Act Effct Green (s)		30.0	44.9		9.5	9.5	12.4	57.0			39.4	70.8	
Actuated g/C Ratio		0.24	0.36		0.08	0.08	0.10	0.46			0.32	0.57	
v/c Ratio		1.12	0.18		0.57	0.12	1.05	0.88			0.89	0.24	
Control Delay (s/veh)		137.3	21.4		79.0	62.0	139.4	49.7			64.2	11.1	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0	
Total Delay (s/veh)		137.3	21.4		79.0	62.0	139.4	49.7			64.2	11.1	
LOS		F	C		E	E	F	D			E	B	
Approach Delay (s/veh)		107.9			76.1			69.5			47.1		
Approach LOS		F			E			E			D		
Queue Length 50th (ft)		~344	45		61	12	~201	569			398	73	
Queue Length 95th (ft)		#450	68		92	29	#358	#833			#588	107	
Internal Link Dist (ft)		770			537			1056			584		
Turn Bay Length (ft)			300			300	300					300	
Base Capacity (vph)		262	544		144	143	170	738			516	867	
Starvation Cap Reductn		0	0		0	0	0	0			0	0	
Spillback Cap Reductn		0	0		0	0	0	0			0	0	
Storage Cap Reductn		0	0		0	0	0	0			0	0	
Reduced v/c Ratio		1.12	0.18		0.47	0.10	1.05	0.86			0.85	0.24	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 123.7

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.12

Intersection Signal Delay (s/veh): 70.1

Intersection LOS: E

Intersection Capacity Utilization 82.8%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 16: Lafayette St & Loring Ave/West St

Ø2 62 s	Ø3 16 s	Ø4 34 s	Ø9 28 s
Ø5 17 s	Ø6 45 s		

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	45	0	105	10	20	90	100	555	0	0	690	220	
Future Volume (vph)	45	0	105	10	20	90	100	555	0	0	690	220	
Satd. Flow (prot)	1501	0	1343	0	1384	0	1546	1627	0	0	2924	0	
Flt Permitted	0.950				0.996		0.097						
Satd. Flow (perm)	1501	0	1284	0	1384	0	158	1627	0	0	2924	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	51	0	118	0	223	0	106	590	0	0	1034	0	
Turn Type	Prot		pm+ov	Split	NA		pm+pt	NA			NA		
Protected Phases	7		5	8	8		5	2			6		9
Permitted Phases			7				2						
Total Split (s)	20.0		20.0	20.0	20.0		20.0	63.0			43.0		27.0
Total Lost Time (s)	6.0		6.0		6.0		6.0	6.0			6.0		
Act Effct Green (s)	10.0		19.7		20.6		67.8	67.8			50.8		
Actuated g/C Ratio	0.08		0.15		0.16		0.52	0.52			0.39		
v/c Ratio	0.44		0.59		1.02		0.53	0.70			0.91		
Control Delay (s/veh)	68.4		40.4		120.7		44.8	30.9			51.1		
Queue Delay	0.0		0.0		0.0		0.0	0.1			0.0		
Total Delay (s/veh)	68.4		40.4		120.7		44.8	31.1			51.1		
LOS	E		D		F		D	C			D		
Approach Delay (s/veh)		48.8			120.7			33.2			51.1		
Approach LOS		D			F			C			D		
Queue Length 50th (ft)	42		46		~221		58	286			~538		
Queue Length 95th (ft)	83		72		#200		m82	m345			#681		
Internal Link Dist (ft)		297			159			120			231		
Turn Bay Length (ft)			100										
Base Capacity (vph)	161		229		218		231	848			1142		
Starvation Cap Reductn	0		0		0		0	16			0		
Spillback Cap Reductn	0		0		0		0	0			0		
Storage Cap Reductn	0		0		0		0	0			0		
Reduced v/c Ratio	0.32		0.52		1.02		0.46	0.71			0.91		

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay (s/veh): 52.4

Intersection LOS: D

Intersection Capacity Utilization 66.7%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: North St & Rte 107 ramp to Rte 114/Federal St

	Ø2 (R)			Ø7		Ø8		Ø9
63 s			20 s		20 s		27 s	
	Ø5							
20 s			43 s					

Intersection												
Int Delay, s/veh	8.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕					↕		
Traffic Vol, veh/h	30	610	35	10	800	10	0	0	0	15	30	150
Future Vol, veh/h	30	610	35	10	800	10	0	0	0	15	30	150
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
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	87	87	87	93	93	93	92	92	92	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	1	1	1
Mvmt Flow	34	701	40	11	860	11	0	0	0	18	36	181
Major/Minor	Major1		Major2				Minor2					
Conflicting Flow All	881	0	0	751	0	0				1677	1717	886
Stage 1	-	-	-	-	-	-				897	897	-
Stage 2	-	-	-	-	-	-				780	820	-
Critical Hdwy	4.12	-	-	4.12	-	-				6.41	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-				5.41	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.41	5.51	-
Follow-up Hdwy	2.218	-	-	2.218	-	-				3.509	4.009	3.309
Pot Cap-1 Maneuver	767	-	-	858	-	-				105	90	345
Stage 1	-	-	-	-	-	-				400	360	-
Stage 2	-	-	-	-	-	-				454	390	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	761	-	-	858	-	-				93	0	339
Mov Cap-2 Maneuver	-	-	-	-	-	-				93	0	-
Stage 1	-	-	-	-	-	-				365	0	-
Stage 2	-	-	-	-	-	-				439	0	-
Approach	EB			WB			SB					
HCM Ctrl Dly, s/v	0.44			0.11			64.61					
HCM LOS	F											
Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1					
Capacity (veh/h)	79	-	-	22	-	-	273					
HCM Lane V/C Ratio	0.045	-	-	0.013	-	-	0.859					
HCM Ctrl Dly (s/v)	10	0	-	9.2	0	-	64.6					
HCM Lane LOS	A	A	-	A	A	-	F					
HCM 95th %tile Q(veh)	0.1	-	-	0	-	-	7.3					

Intersection										
Int Delay, s/veh	4.5									
Movement	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations										
Traffic Vol, veh/h	5	25	15	910	15	20	1100	125	0	0
Future Vol, veh/h	5	25	15	910	15	20	1100	125	0	0
Conflicting Peds, #/hr	0	5	20	0	10	0	0	20	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	-	None	-	-
Storage Length	0	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	67	67	91	91	91	91	91	91	71	71
Heavy Vehicles, %	8	8	2	2	2	2	2	2	5	5
Mvmt Flow	7	37	16	1000	16	22	1209	137	0	0
Major/Minor	Minor1		Major1		Major2			Minor2		
Conflicting Flow All	1720	1023	1366	0	0	1026	0	0	-	713
Stage 1	1051	-	-	-	-	-	-	-	-	-
Stage 2	668	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.42	6.32	4.13	-	-	4.13	-	-	-	6.975
Critical Hdwy Stg 1	6.22	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.62	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2	2	2.219	-	-	2.219	-	-	-	3.3475
Pot Cap-1 Maneuver	81	392	501	-	-	674	-	-	0	370
Stage 1	386	-	-	-	-	-	-	-	0	-
Stage 2	630	-	-	-	-	-	-	-	0	-
Platoon blocked, %				-	-		-	-		
Mov Cap-1 Maneuver	63	386	492	-	-	668	-	-	-	357
Mov Cap-2 Maneuver	63	-	-	-	-	-	-	-	-	-
Stage 1	354	-	-	-	-	-	-	-	-	-
Stage 2	540	-	-	-	-	-	-	-	-	-
Approach	EB		SE		NW			SW		
HCM Ctrl Dly, s/v	129.33		0.2		0.65			15.96		
HCM LOS	F							C		
Minor Lane/Major Mvmt	NWL	NWT	NWR	EBLn1	SEL	SET	SER	SWLn1		
Capacity (veh/h)	51	-	-	92	29	-	-	357		
HCM Lane V/C Ratio	0.033	-	-	0.814	0.034	-	-	0.079		
HCM Ctrl Dly (s/v)	10.6	0.5	-	129.3	12.6	0	-	16		
HCM Lane LOS	B	A	-	F	B	A	-	C		
HCM 95th %tile Q(veh)	0.1	-	-	4.3	0.1	-	-	0.3		

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	20	0	115	0	590	0	0	760	5
Future Vol, veh/h	0	0	0	20	0	115	0	590	0	0	760	5
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
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	84	84	84	77	77	77	93	93	93	90	90	90
Heavy Vehicles, %	0	0	0	1	1	1	1	1	1	2	2	2
Mvmt Flow	0	0	0	26	0	149	0	634	0	0	844	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1502	1492	445	1067	1494	644	860	0	-	-	-	0
Stage 1	857	857	-	634	634	-	-	-	-	-	-	-
Stage 2	644	634	-	432	860	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.5	6.9	7.315	6.515	6.215	4.115	-	-	-	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.115	5.515	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.515	5.515	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5095	4.0095	3.3095	2.2095	-	-	-	-	-
Pot Cap-1 Maneuver	93	125	566	189	123	474	785	-	0	0	-	-
Stage 1	322	377	-	468	474	-	-	-	0	0	-	-
Stage 2	465	476	-	575	374	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	62	124	556	187	122	470	778	-	-	-	-	-
Mov Cap-2 Maneuver	62	124	-	187	122	-	-	-	-	-	-	-
Stage 1	320	373	-	468	474	-	-	-	-	-	-	-
Stage 2	314	476	-	570	370	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	0		22.02		0		0	
HCM LOS	A		C					

Minor Lane/Major Mvmt	NBL	NBT	EBLnI	WBLnI	SBT	SBR
Capacity (veh/h)	778	-	-	384	-	-
HCM Lane V/C Ratio	-	-	-	0.457	-	-
HCM Ctrl Dly (s/v)	0	-	0	22	-	-
HCM Lane LOS	A	-	A	C	-	-
HCM 95th %tile Q(veh)	0	-	-	2.3	-	-

Intersection												
Int Delay, s/veh	24.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	10	160	0	90	5	585	0	0	730	10
Future Vol, veh/h	5	0	10	160	0	90	5	585	0	0	730	10
Conflicting Peds, #/hr	20	0	20	20	0	20	20	0	20	20	0	20
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	63	63	63	94	94	94	86	86	86	94	94	94
Heavy Vehicles, %	0	0	0	4	4	4	2	2	2	2	2	2
Mvmt Flow	8	0	16	170	0	96	6	680	0	0	777	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1514	1494	822	1488	1499	700	807	0	-	-	-	0
Stage 1	802	802	-	692	692	-	-	-	-	-	-	-
Stage 2	712	692	-	797	807	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	6.5	6.54	6.24	4.12	-	-	-	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	2	2	2	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	99	124	377	180	174	645	818	-	0	0	-	-
Stage 1	381	399	-	666	748	-	-	-	0	0	-	-
Stage 2	427	448	-	573	645	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	80	121	364	~ 167	169	634	804	-	-	-	-	-
Mov Cap-2 Maneuver	80	121	-	~ 167	169	-	-	-	-	-	-	-
Stage 1	374	392	-	658	739	-	-	-	-	-	-	-
Stage 2	352	443	-	538	634	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	30.06	157.65	0.08	0
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLnI	WBLnI	SBT	SBR
Capacity (veh/h)	15	-	167	228	-	-
HCM Lane V/C Ratio	0.007	-	0.142	1.169	-	-
HCM Ctrl Dly (s/v)	9.5	0	30.1	157.6	-	-
HCM Lane LOS	A	A	D	F	-	-
HCM 95th %tile Q(veh)	0	-	0.5	12.7	-	-

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

Intersection													
Int Delay, s/veh	2.7												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕						↕			↕		
Traffic Vol, veh/h	10	15	5	0	0	0	10	575	210	90	770	10	
Future Vol, veh/h	10	15	5	0	0	0	10	575	210	90	770	10	
Conflicting Peds, #/hr	10	0	10	10	0	10	20	0	50	50	0	20	
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	61	61	61	92	92	92	88	88	88	93	93	93	
Heavy Vehicles, %	0	0	0	0	0	0	2	2	2	3	3	3	
Mvmt Flow	16	25	8	0	0	0	11	653	239	97	828	11	
Major/Minor	Minor2						Major1		Major2				
Conflicting Flow All	1733	2012	863				859	0	0	942	0	0	
Stage 1	1047	1047	-				-	-	-	-	-	-	
Stage 2	686	965	-				-	-	-	-	-	-	
Critical Hdwy	6.4	6.5	6.2				4.12	-	-	4.13	-	-	
Critical Hdwy Stg 1	5.4	5.5	-				-	-	-	-	-	-	
Critical Hdwy Stg 2	5.4	5.5	-				-	-	-	-	-	-	
Follow-up Hdwy	3.5	4	3.3				2.218	-	-	2.227	-	-	
Pot Cap-1 Maneuver	98	60	357				782	-	-	724	-	-	
Stage 1	341	308	-				-	-	-	-	-	-	
Stage 2	504	336	-				-	-	-	-	-	-	
Platoon blocked, %								-	-	-			-
Mov Cap-1 Maneuver	68	0	348				769	-	-	724	-	-	
Mov Cap-2 Maneuver	68	0	-				-	-	-	-	-	-	
Stage 1	325	0	-				-	-	-	-	-	-	
Stage 2	371	0	-				-	-	-	-	-	-	
Approach	EB						NB		SB				
HCM Ctrl Dly, s/v	80						0.12		1.11				
HCM LOS	F												
Minor Lane/Major Mvmt	NBL		NBT	NBR	EBLnI	SBL	SBT	SBR					
Capacity (veh/h)	21		-	-	93	186	-	-					
HCM Lane V/C Ratio	0.015		-	-	0.526	0.134	-	-					
HCM Ctrl Dly (s/v)	9.8		0	-	80	10.7	0	-					
HCM Lane LOS	A		A	-	F	B	A	-					
HCM 95th %tile Q(veh)	0		-	-	2.3	0.5	-	-					

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	5	5	10	0	25	5	715	10	45	680	15
Future Vol, veh/h	5	5	5	10	0	25	5	715	10	45	680	15
Conflicting Peds, #/hr	20	0	20	20	0	20	20	0	20	20	0	20
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	83	83	83	69	69	69	93	93	93	96	96	96
Heavy Vehicles, %	10	10	10	0	0	0	3	3	3	2	2	2
Mvmt Flow	6	6	6	14	0	36	5	769	11	47	708	16
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1629	1640	756	1630	1643	814	744	0	0	800	0	0
Stage 1	830	830	-	805	805	-	-	-	-	-	-	-
Stage 2	800	810	-	825	838	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.1	6.5	6.2	4.13	-	-	4.12	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.5	4	3.3	2.227	-	-	2.218	-	-
Pot Cap-1 Maneuver	78	96	395	82	101	381	859	-	-	823	-	-
Stage 1	353	374	-	379	398	-	-	-	-	-	-	-
Stage 2	367	382	-	370	385	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	61	83	382	65	87	368	844	-	-	809	-	-
Mov Cap-2 Maneuver	61	83	-	65	87	-	-	-	-	-	-	-
Stage 1	313	332	-	368	387	-	-	-	-	-	-	-
Stage 2	322	371	-	317	341	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	50.95		38.14		0.06		0.59					
HCM LOS	F		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLnI	WBLnI	SBL	SBT	SBR				
Capacity (veh/h)	12	-	-	96	158	109	-	-				
HCM Lane V/C Ratio	0.006	-	-	0.188	0.321	0.058	-	-				
HCM Ctrl Dly (s/v)	9.3	0	-	50.9	38.1	9.7	0	-				
HCM Lane LOS	A	A	-	F	E	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.7	1.3	0.2	-	-				

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	15	25	5	5	10	15	695	10	20	595	30
Future Vol, veh/h	15	15	25	5	5	10	15	695	10	20	595	30
Conflicting Peds, #/hr	10	0	10	10	0	10	12	0	12	12	0	12
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	75	75	75	64	64	64	96	96	96	98	98	98
Heavy Vehicles, %	4	4	4	6	6	6	3	3	3	2	2	2
Mvmt Flow	20	20	33	8	8	16	16	724	10	20	607	31
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1444	1453	644	1440	1463	751	650	0	0	746	0	0
Stage 1	675	675	-	772	772	-	-	-	-	-	-	-
Stage 2	769	778	-	668	691	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.16	6.56	6.26	4.13	-	-	4.12	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.16	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.16	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.554	4.054	3.354	2.227	-	-	2.218	-	-
Pot Cap-1 Maneuver	109	129	469	108	126	404	932	-	-	862	-	-
Stage 1	440	450	-	386	403	-	-	-	-	-	-	-
Stage 2	391	404	-	441	440	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	90	118	460	77	115	396	922	-	-	853	-	-
Mov Cap-2 Maneuver	90	118	-	77	115	-	-	-	-	-	-	-
Stage 1	419	429	-	371	388	-	-	-	-	-	-	-
Stage 2	354	388	-	372	419	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	46.24		35.18		0.19		0.29					
HCM LOS	E		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLnI	WBLnI	SBL	SBT	SBR				
Capacity (veh/h)	37	-	-	158	150	55	-	-				
HCM Lane V/C Ratio	0.017	-	-	0.465	0.208	0.024	-	-				
HCM Ctrl Dly (s/v)	9	0	-	46.2	35.2	9.3	0	-				
HCM Lane LOS	A	A	-	E	E	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	2.2	0.8	0.1	-	-				

Intersection						
Int Delay, s/veh	12.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	585	655	0	0	875
Future Vol, veh/h	0	585	655	0	0	875
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	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	609	682	0	0	911
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	341	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.33	-	-	-	-
Pot Cap-1 Maneuver	0	652	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	652	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Ctrl Dly, s/v	46.24	0	0			
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	WBLnl	SBT			
Capacity (veh/h)	-	652	-			
HCM Lane V/C Ratio	-	0.935	-			
HCM Ctrl Dly (s/v)	-	46.2	-			
HCM Lane LOS	-	E	-			
HCM 95th %tile Q(veh)	-	12.7	-			

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	5	5	10	0	25	5	715	10	45	680	15
Future Vol, veh/h	5	5	5	10	0	25	5	715	10	45	680	15
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	83	83	83	69	69	69	93	93	93	96	96	96
Heavy Vehicles, %	10	10	10	0	0	0	3	3	3	2	2	2
Mvmt Flow	6	6	6	14	0	36	5	769	11	47	708	16
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1589	1600	716	1590	1603	774	724	0	0	780	0	0
Stage 1	810	810	-	785	785	-	-	-	-	-	-	-
Stage 2	780	790	-	805	818	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.1	6.5	6.2	4.13	-	-	4.12	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.5	4	3.3	2.227	-	-	2.218	-	-
Pot Cap-1 Maneuver	83	102	417	88	107	402	874	-	-	838	-	-
Stage 1	362	382	-	389	407	-	-	-	-	-	-	-
Stage 2	377	390	-	379	393	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	68	91	417	73	96	402	874	-	-	838	-	-
Mov Cap-2 Maneuver	68	91	-	73	96	-	-	-	-	-	-	-
Stage 1	328	346	-	385	402	-	-	-	-	-	-	-
Stage 2	339	386	-	333	356	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	45.49		33.63		0.06		0.58					
HCM LOS	E		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLnI	WBLnI	SBL	SBT	SBR				
Capacity (veh/h)	12	-	-	107	176	109	-	-				
HCM Lane V/C Ratio	0.006	-	-	0.169	0.289	0.056	-	-				
HCM Ctrl Dly (s/v)	9.1	0	-	45.5	33.6	9.6	0	-				
HCM Lane LOS	A	A	-	E	D	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.6	1.1	0.2	-	-				

Part 5: 2040 Build Conditions: Weekday AM Peak-Hour LOS and Delays

													Ø9
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	55	550	15	0	850	25	0	0	0	15	40	130	
Future Volume (vph)	55	550	15	0	850	25	0	0	0	15	40	130	
Satd. Flow (prot)	0	1519	0	0	1553	0	0	0	0	0	1493	0	
Flt Permitted		*0.900									0.996		
Satd. Flow (perm)	0	1372	0	0	1553	0	0	0	0	0	1488	0	
Satd. Flow (RTOR)											64		
Lane Group Flow (vph)	0	666	0	0	921	0	0	0	0	0	205	0	
Turn Type	Perm	NA			NA					Split	NA		
Protected Phases		4			8					6	6		9
Permitted Phases	4			8									
Total Split (s)	102.0	102.0		102.0	102.0					23.0	23.0		25.0
Total Lost Time (s)		5.0			5.0						5.0		
Act Effct Green (s)		112.1			112.1						18.3		
Actuated g/C Ratio		0.75			0.75						0.12		
v/c Ratio		0.65			0.79						0.86		
Control Delay (s/veh)		16.1			13.2						74.7		
Queue Delay		0.1			0.6						0.2		
Total Delay (s/veh)		16.2			13.8						74.9		
LOS		B			B						E		
Approach Delay (s/veh)		16.2			13.8						74.9		
Approach LOS		B			B						E		
Queue Length 50th (ft)		236			179						135		
Queue Length 95th (ft)		604			m65						#279		
Internal Link Dist (ft)		2078			541			113			384		
Turn Bay Length (ft)													
Base Capacity (vph)		1025			1160						248		
Starvation Cap Reductn		0			55						0		
Spillback Cap Reductn		24			0						1		
Storage Cap Reductn		0			0						0		
Reduced v/c Ratio		0.67			0.83						0.83		

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 123 (82%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay (s/veh): 21.7

Intersection LOS: C

Intersection Capacity Utilization 102.4%

ICU Level of Service G

Analysis Period (min) 15

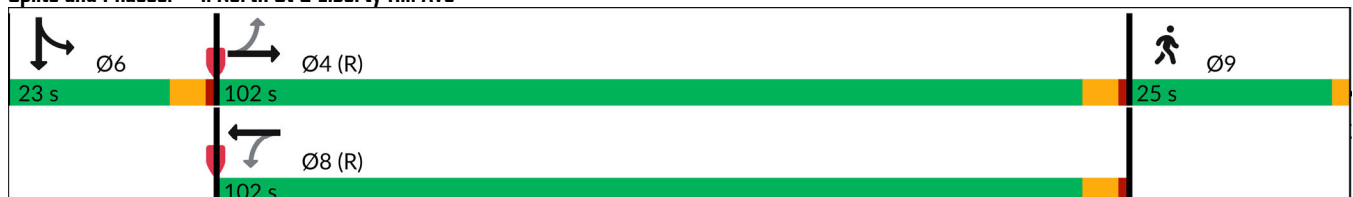
* User Entered Value

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: North St & Liberty Hill Ave



													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	5	530	10	15	740	50	60	85	20	120	75	35	
Future Volume (vph)	5	530	10	15	740	50	60	85	20	120	75	35	
Satd. Flow (prot)	1662	1525	0	1694	1543	0	0	1487	0	0	1688	0	
Flt Permitted	*0.900			*0.900				0.982			0.975		
Satd. Flow (perm)	1574	1525	0	1605	1543	0	0	1487	0	0	1688	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	5	556	0	16	858	0	0	201	0	0	307	0	
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA		
Protected Phases		4			8		2	2		6	6		9
Permitted Phases	4			8									
Total Split (s)	74.0	74.0		74.0	74.0		23.0	23.0		28.0	28.0		25.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0			6.0		
Act Effct Green (s)	68.0	68.0		68.0	68.0			27.4			26.6		
Actuated g/C Ratio	0.45	0.45		0.45	0.45			0.18			0.18		
v/c Ratio	0.01	0.80		0.02	1.23			0.74			1.03		
Control Delay (s/veh)	15.8	33.4		16.0	142.9			74.6			117.1		
Queue Delay	0.0	1.9		0.0	0.0			0.0			0.0		
Total Delay (s/veh)	15.8	35.3		16.0	142.9			74.6			117.1		
LOS	B	D		B	F			E			F		
Approach Delay (s/veh)		35.2			140.6			74.6			117.1		
Approach LOS		D			F			E			F		
Queue Length 50th (ft)	2	466		5	~1042			182			290		
Queue Length 95th (ft)	m2	492		m10	#1277			#352			#431		
Internal Link Dist (ft)		541			1292			401			319		
Turn Bay Length (ft)	100			100									
Base Capacity (vph)	713	691		727	699			271			299		
Starvation Cap Reductn	0	49		0	0			0			0		
Spillback Cap Reductn	0	0		0	0			0			0		
Storage Cap Reductn	0	0		0	0			0			0		
Reduced v/c Ratio	0.01	0.87		0.02	1.23			0.74			1.03		

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 138 (92%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.23

Intersection Signal Delay (s/veh): 99.6

Intersection LOS: F

Intersection Capacity Utilization 71.5%

ICU Level of Service C

Analysis Period (min) 15

* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.

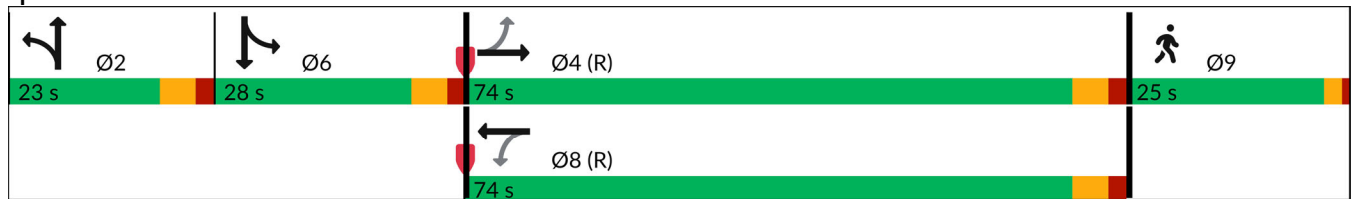
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: School St/Orne St & North St



							Ø4	Ø9
Lane Group	SET	SER	NWL	NWT	NEL	NER	Ø4	Ø9
Lane Configurations								
Traffic Volume (vph)	715	30	295	740	0	175		
Future Volume (vph)	715	30	295	740	0	175		
Satd. Flow (prot)	1738	0	1678	1766	0	1528		
Flt Permitted			0.950					
Satd. Flow (perm)	1738	0	1678	1766	0	1464		
Satd. Flow (RTOR)								
Lane Group Flow (vph)	776	0	321	804	0	219		
Turn Type	NA		Prot	NA		pm+ov		
Protected Phases	6		5	2		5	4	9
Permitted Phases						4		
Total Split (s)	68.0		33.0	101.0		33.0	23.0	26.0
Total Lost Time (s)	4.0		5.0	4.0		5.0		
Act Effct Green (s)	86.7		38.7	132.0		38.7		
Actuated g/C Ratio	0.58		0.26	0.88		0.26		
v/c Ratio	0.77		0.74	0.52		0.56		
Control Delay (s/veh)	13.8		55.2	9.5		54.0		
Queue Delay	0.0		0.0	0.0		0.0		
Total Delay (s/veh)	13.8		55.2	9.5		54.0		
LOS	B		E	A		D		
Approach Delay (s/veh)	13.8			22.6	54.0			
Approach LOS	B			C	D			
Queue Length 50th (ft)	461		278	388		188		
Queue Length 95th (ft)	m#898		396	654		232		
Internal Link Dist (ft)	1292			252	419			
Turn Bay Length (ft)								
Base Capacity (vph)	1004		433	1554		394		
Starvation Cap Reductn	0		0	0		0		
Spillback Cap Reductn	0		0	0		0		
Storage Cap Reductn	0		0	0		0		
Reduced v/c Ratio	0.77		0.74	0.52		0.56		

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 22 (15%), Referenced to phase 2:NWT and 6:SET, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay (s/veh): 22.6

Intersection LOS: C

Intersection Capacity Utilization 72.8%

ICU Level of Service C

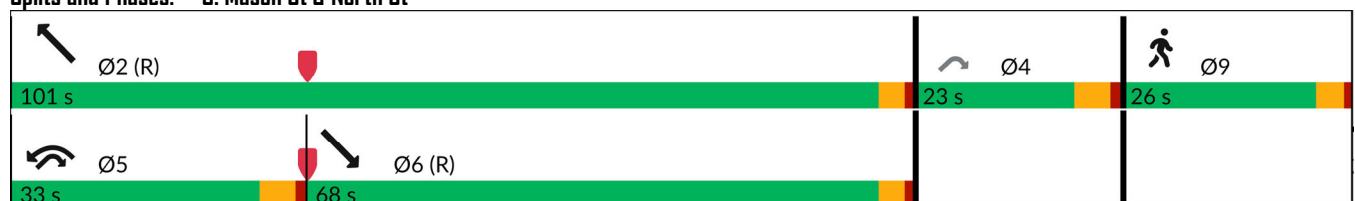
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mason St & North St



													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations											 		
Traffic Volume (vph)	20	0	70	10	25	115	85	610	0	0	590	290	
Future Volume (vph)	20	0	70	10	25	115	85	610	0	0	590	290	
Satd. Flow (prot)	1694	0	1516	0	1552	0	1694	1783	0	0	3183	0	
Flt Permitted	0.950				0.997		*0.950						
Satd. Flow (perm)	1694	0	1405	0	1552	0	1694	1783	0	0	3183	0	
Satd. Flow (RTOR)					*30								
Lane Group Flow (vph)	22	0	76	0	163	0	88	629	0	0	910	0	
Turn Type	Prot		pm+av	Split	NA		pm+pt	NA			NA		
Protected Phases	7		5	8	8		5	2			6		9
Permitted Phases			7				2						
Total Split (s)	13.0		16.0	32.0	32.0		16.0	78.0			62.0		27.0
Total Lost Time (s)	6.0		6.0		6.0		6.0	6.0			6.0		
Act Effct Green (s)	7.4		14.6		18.4		95.3	95.3			79.3		
Actuated g/C Ratio	0.05		0.10		0.12		0.64	0.64			0.53		
v/c Ratio	0.27		0.53		0.75		0.08	0.56			0.54		
Control Delay (s/veh)	76.9		57.6		72.3		12.0	13.3			17.1		
Queue Delay	0.0		0.0		0.0		0.0	0.3			0.0		
Total Delay (s/veh)	76.9		57.6		72.3		12.0	13.6			17.1		
LOS	E		E		E		B	B			B		
Approach Delay (s/veh)		61.9			72.3			13.4			17.1		
Approach LOS		E			E			B			B		
Queue Length 50th (ft)	21		53		128		21	157			290		
Queue Length 95th (ft)	53		89		201		m31	m220			410		
Internal Link Dist (ft)		297			159			120			231		
Turn Bay Length (ft)			100										
Base Capacity (vph)	83		143		293		1076	1132			1682		
Starvation Cap Reductn	0		0		0		0	119			0		
Spillback Cap Reductn	0		0		0		0	0			0		
Storage Cap Reductn	0		0		0		0	0			0		
Reduced v/c Ratio	0.27		0.53		0.56		0.08	0.62			0.54		

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 54 (36%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay (s/veh): 22.8

Intersection LOS: C

Intersection Capacity Utilization 63.9%

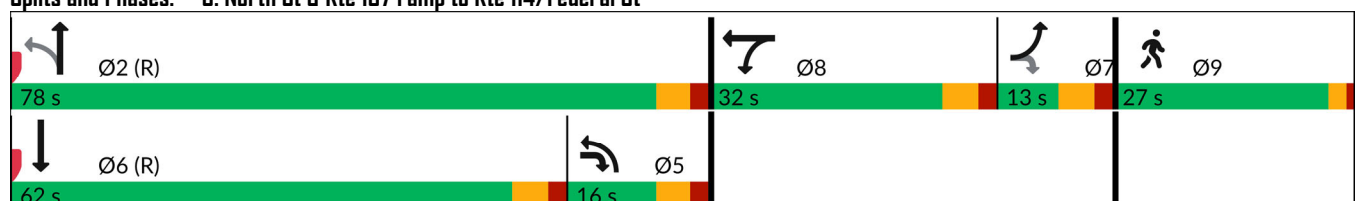
ICU Level of Service B

Analysis Period (min) 15

* User Entered Value

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: North St & Rte 107 ramp to Rte 114/Federal St



													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	100	120	35	0	0	0	0	550	35	110	480	55	
Future Volume (vph)	100	120	35	0	0	0	0	550	35	110	480	55	
Satd. Flow (prot)	0	1365	1356	0	0	0	0	1382	0	1501	1356	0	
Flt Permitted		0.978								0.236			
Satd. Flow (perm)	0	1365	1279	0	0	0	0	1382	0	373	1356	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	0	242	38	0	0	0	0	597	0	111	541	0	
Turn Type	Split	NA	Perm					NA		pm+pt	NA		
Protected Phases	4	4						2		1	6		9
Permitted Phases			4							6			
Total Split (s)	32.0	32.0	32.0					72.0		11.0	83.0		35.0
Total Lost Time (s)		5.0	5.0					5.0		4.0	5.0		
Act Effct Green (s)		27.0	27.0					75.4		90.8	89.8		
Actuated g/C Ratio		0.18	0.18					0.50		0.61	0.60		
v/c Ratio		0.99	0.17					0.86		0.37	0.67		
Control Delay (s/veh)		114.7	54.3					47.5		14.5	19.7		
Queue Delay		0.0	0.0					6.0		0.0	0.3		
Total Delay (s/veh)		114.7	54.3					53.6		14.5	20.1		
LOS		F	D					D		B	C		
Approach Delay (s/veh)		106.5						53.6			19.1		
Approach LOS		F						D			B		
Queue Length 50th (ft)		239	32					553		20	100		
Queue Length 95th (ft)		#420	68					#831		53	234		
Internal Link Dist (ft)		473			358			431			307		
Turn Bay Length (ft)			75										
Base Capacity (vph)		245	230					694		304	811		
Starvation Cap Reductn		0	0					63		0	0		
Spillback Cap Reductn		0	0					0		0	44		
Storage Cap Reductn		0	0					0		0	0		
Reduced v/c Ratio		0.99	0.17					0.95		0.37	0.71		

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 50 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay (s/veh): 48.6

Intersection LOS: D

Intersection Capacity Utilization 73.2%

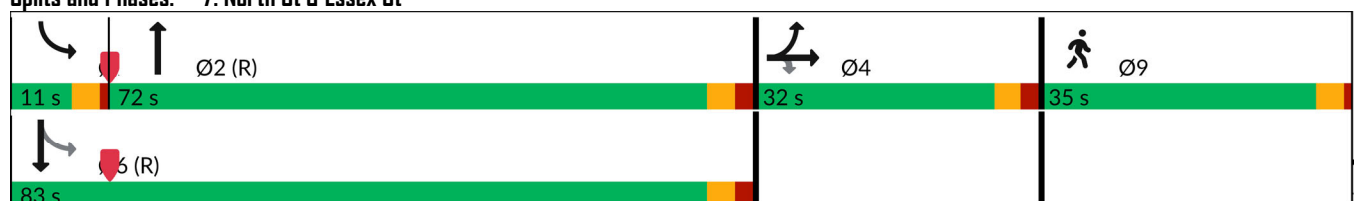
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 7: North St & Essex St



8: Summer St/North St & Chestnut St/Norman St
Seth

2040 Build AM
10/05/2025

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	10	90	15	20	0	340	0	235	40	345	165	0	
Future Volume (vph)	10	90	15	20	0	340	0	235	40	345	165	0	
Satd. Flow (prot)	0	1511	0	0	1269	0	0	1520	0	0	1480	0	
Flt Permitted		*0.900			0.952						0.596		
Satd. Flow (perm)	0	1361	0	0	1210	0	0	1520	0	0	906	0	
Satd. Flow (RTOR)					362								
Lane Group Flow (vph)	0	146	0	0	383	0	0	316	0	0	554	0	
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA		
Protected Phases		4			8			2			6		9
Permitted Phases	4			8						6			
Total Split (s)	35.0	35.0		35.0	35.0			90.0		90.0	90.0		25.0
Total Lost Time (s)		5.0			5.0			5.0			5.0		
Act Effct Green (s)		21.4			21.4			109.8			109.8		
Actuated g/C Ratio		0.14			0.14			0.73			0.73		
v/c Ratio		0.75			0.79			0.28			0.84		
Control Delay (s/veh)		84.0			19.0			10.3			25.2		
Queue Delay		0.0			2.7			0.2			0.0		
Total Delay (s/veh)		84.0			21.7			10.5			25.2		
LOS		F			C			B			C		
Approach Delay (s/veh)		84.0			21.7			10.5			25.2		
Approach LOS		F			C			B			C		
Queue Length 50th (ft)		139			93			70			192		
Queue Length 95th (ft)		177			m113			210			#815		
Internal Link Dist (ft)		246			238			211			431		
Turn Bay Length (ft)													
Base Capacity (vph)		272			531			1112			662		
Starvation Cap Reductn		0			0			0			0		
Spillback Cap Reductn		0			69			295			0		
Storage Cap Reductn		0			0			0			0		
Reduced v/c Ratio		0.54			0.83			0.39			0.84		

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 43 (29%), Referenced to phase 6:SBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay (s/veh): 27.1

Intersection LOS: C

Intersection Capacity Utilization 83.6%

ICU Level of Service E

Analysis Period (min) 15

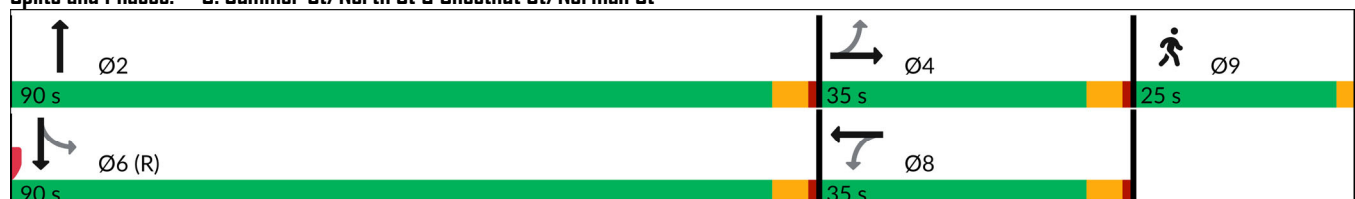
* User Entered Value

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Summer St/North St & Chestnut St/Norman St



													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	30	185	190	65	225	75	250	600	165	65	200	70	
Future Volume (vph)	30	185	190	65	225	75	250	600	165	65	200	70	
Satd. Flow (prot)	1662	1749	1487	1678	1684	0	1694	3388	1516	1678	1766	1501	
Flt Permitted	0.950			0.950			0.950			0.950			
Satd. Flow (perm)	1662	1749	1423	1678	1684	0	1694	3388	1420	1678	1766	1358	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	35	218	224	76	349	0	278	667	183	71	217	76	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	
Protected Phases	7	4		3	8		5	2		1	6		9
Permitted Phases			4						2			6	
Total Split (s)	12.0	40.0	40.0	15.0	43.0		36.0	46.0	46.0	19.0	29.0	29.0	30.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	
Act Effct Green (s)	6.3	30.5	30.5	8.8	35.5		27.7	49.7	49.7	13.0	35.0	35.0	
Actuated g/C Ratio	0.04	0.20	0.20	0.06	0.24		0.18	0.33	0.33	0.09	0.23	0.23	
v/c Ratio	0.51	0.61	0.78	0.78	0.88		0.89	0.60	0.39	0.49	0.53	0.24	
Control Delay (s/veh)	95.3	64.6	74.3	112.8	78.1		64.6	31.5	29.1	77.4	61.0	56.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	95.3	64.6	74.3	112.8	78.1		64.6	31.5	29.1	77.4	61.0	56.9	
LDS	F	E	E	F	E		E	C	C	E	E	E	
Approach Delay (s/veh)		71.4			84.3			39.3			63.3		
Approach LDS		E			F			D			E		
Queue Length 50th (ft)	34	198	204	75	327		277	325	149	67	208	68	
Queue Length 95th (ft)	m47	m225	m243	#154	#451		m#384	m385	m214	123	#338	122	
Internal Link Dist (ft)		193			332			528			749		
Turn Bay Length (ft)	100		150				200		200	200		200	
Base Capacity (vph)	69	396	322	100	415		338	1121	470	145	411	316	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Reduced v/c Ratio	0.51	0.55	0.70	0.76	0.84		0.82	0.60	0.39	0.49	0.53	0.24	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay (s/veh): 57.3

Intersection LDS: E

Intersection Capacity Utilization 66.3%

ICU Level of Service C

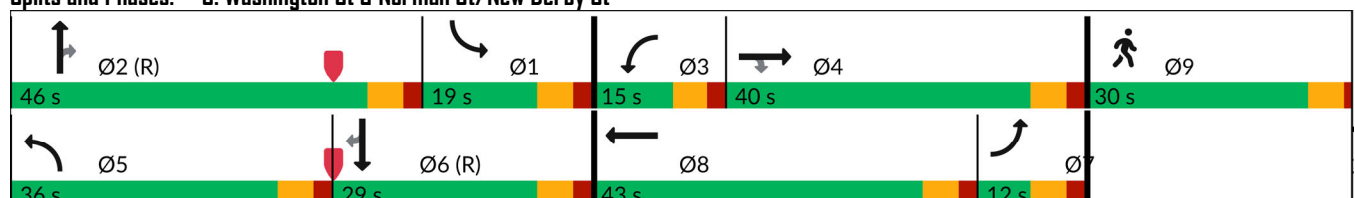
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Washington St & Norman St/New Derby St



													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	145	255	260	20	190	270	135	580	20	145	285	35	
Future Volume (vph)	145	255	260	20	190	270	135	580	20	145	285	35	
Satd. Flow (prot)	1694	1783	1516	0	1774	1516	1711	3396	0	1694	1783	1516	
Flt Permitted	0.950				0.531		0.950			0.950			
Satd. Flow (perm)	1694	1783	1442	0	947	1456	1711	3396	0	1694	1783	1432	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	167	293	299	0	226	290	147	652	0	161	317	39	
Turn Type	Prot	NA	pm+av	Perm	NA	pm+av	Prot	NA		Prot	NA	pm+av	
Protected Phases	7	4	5		8	1	5	2		1	6	7	9
Permitted Phases			4	8		8						6	
Total Split (s)	23.0	53.0	22.0	30.0	30.0	22.0	22.0	40.0		22.0	40.0	23.0	35.0
Total Lost Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0	
Act Effct Green (s)	16.0	46.0	61.0		23.0	38.3	15.0	39.7		15.3	40.0	56.0	
Actuated g/C Ratio	0.11	0.31	0.41		0.15	0.26	0.10	0.26		0.10	0.27	0.37	
v/c Ratio	0.93	0.54	0.50		1.56	0.77	0.86	0.73		0.93	0.67	0.07	
Control Delay (s/veh)	115.8	47.5	33.2		322.0	45.1	105.5	57.8		88.4	36.1	12.1	
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay (s/veh)	115.8	47.5	33.2		322.0	45.1	105.5	57.8		88.4	36.1	12.1	
LDS	F	D	C		F	D	F	E		F	D	B	
Approach Delay (s/veh)		56.9			166.4			66.5			50.6		
Approach LDS		E			F			E			D		
Queue Length 50th (ft)	165	239	197		~311	147	144	327		140	322	17	
Queue Length 95th (ft)	#295	323	269		#486	#224	#275	#425		m#294	#456	m30	
Internal Link Dist (ft)		253			828			250			528		
Turn Bay Length (ft)						300	300						
Base Capacity (vph)	180	546	593		145	378	171	898		173	475	543	
Starvation Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Storage Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Reduced v/c Ratio	0.93	0.54	0.50		1.56	0.77	0.86	0.73		0.93	0.67	0.07	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 86 (57%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.56

Intersection Signal Delay (s/veh): 80.4

Intersection LDS: F

Intersection Capacity Utilization 72.6%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Canal St & Mill St & Washington St

	Ø1		Ø2 (R)		Ø4		Ø9
22 s		40 s		53 s		35 s	
	Ø6 (R)		Ø5		Ø8		Ø7
40 s		22 s		30 s		23 s	

													
Lane Group	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SER	SWL2	SWL	SWR	SWR2
Lane Configurations													
Traffic Volume (vph)	355	305	5	35	5	10	290	5	335	5	5	5	5
Future Volume (vph)	355	305	5	35	5	10	290	5	335	5	5	5	5
Satd. Flow (prot)	1678	1513	0	0	0	1646	1511	0	1528	0	1617	0	0
Flt Permitted	0.380					0.950					0.976		
Satd. Flow (perm)	671	1513	0	0	0	1646	1511	0	1446	0	1617	0	0
Satd. Flow (RTOR)									*100				
Lane Group Flow (vph)	394	384	0	0	0	18	347	0	409	0	20	0	0
Turn Type	pm+pt	NA			Prot	Prot	NA		Perm	Prot	Prot		
Protected Phases	5	2			1	1	6			7	7		
Permitted Phases	2								4				
Total Split (s)	19.0	38.5			16.0	16.0	35.5		29.0	12.5	12.5		24.0
Total Lost Time (s)	4.0	8.0				8.0	8.0		5.0		7.5		
Act Effct Green (s)	67.2	57.2				8.0	44.6		24.0		5.0		
Actuated g/C Ratio	0.56	0.48				0.07	0.37		0.20		0.04		
v/c Ratio	0.79	0.53				0.17	0.62		1.11		0.30		
Control Delay (s/veh)	37.3	27.9				56.6	41.5		113.4		67.4		
Queue Delay	2.0	1.3				0.0	0.0		0.8		0.0		
Total Delay (s/veh)	39.2	29.2				56.6	41.5		114.3		67.4		
LDS	D	C				E	D		F		E		
Approach Delay (s/veh)		34.3					42.2				67.4		
Approach LDS		C					D				E		
Queue Length 50th (ft)	226	228				13	232		~296		15		
Queue Length 95th (ft)	#365	#494				36	#427		#421		42		
Internal Link Dist (ft)		285					738				98		
Turn Bay Length (ft)	200					200							
Base Capacity (vph)	501	721				109	561		369		67		
Starvation Cap Reductn	34	166				0	0		0		0		
Spillback Cap Reductn	0	0				0	0		28		0		
Storage Cap Reductn	0	0				0	0		0		0		
Reduced v/c Ratio	0.84	0.69				0.17	0.62		1.20		0.30		

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay (s/veh): 57.4

Intersection LDS: E

Intersection Capacity Utilization 65.2%

ICU Level of Service C

Analysis Period (min) 15

* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 11: Lafayette St & Dow St & Washington St

 Ø2 (R)	 Ø1	 Ø4	 Ø7	 Ø9
38.5 s	16 s	29 s	12.5 s	24 s
 Ø6 (R)	 Ø5			
35.5 s	19 s			

12: Lafayette St & Palmer St
Seth

2040 Build AM
10/05/2025

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	5	0	5	75	0	90	5	665	0	0	590	5	
Future Volume (vph)	5	0	5	75	0	90	5	665	0	0	590	5	
Satd. Flow (prot)	0	1364	0	0	1326	0	0	1545	0	0	1529	0	
Flt Permitted					0.978			0.997					
Satd. Flow (perm)	0	1379	0	0	1286	0	0	1541	0	0	1529	0	
Satd. Flow (RTOR)		82			82								
Lane Group Flow (vph)	0	10	0	0	187	0	0	769	0	0	668	0	
Turn Type	Perm	NA		Split	NA		Perm	NA			NA		
Protected Phases		4		8	8			2			6		9
Permitted Phases	4						2						
Total Split (s)	23.0	23.0		23.0	23.0		49.0	49.0			49.0		25.0
Total Lost Time (s)		5.0			5.0			5.0			5.0		
Act Effct Green (s)		5.5			15.6			87.9			87.9		
Actuated g/C Ratio		0.05			0.13			0.73			0.73		
v/c Ratio		0.07			0.77			0.68			0.60		
Control Delay (s/veh)		1.0			47.6			15.0			9.4		
Queue Delay		0.0			0.2			0.4			1.6		
Total Delay (s/veh)		1.0			47.8			15.4			11.0		
LOS		A			D			B			B		
Approach Delay (s/veh)		1.0			47.8			15.4			11.0		
Approach LOS		A			D			B			B		
Queue Length 50th (ft)		0			80			44			15		
Queue Length 95th (ft)		0			151			m#844			m#306		
Internal Link Dist (ft)		64			604			261			285		
Turn Bay Length (ft)													
Base Capacity (vph)		276			283			1129			1120		
Starvation Cap Reductn		0			0			0			272		
Spillback Cap Reductn		0			4			75			0		
Storage Cap Reductn		0			0			0			0		
Reduced v/c Ratio		0.04			0.67			0.73			0.79		

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay (s/veh): 17.2

Intersection LOS: B

Intersection Capacity Utilization 60.1%

ICU Level of Service B

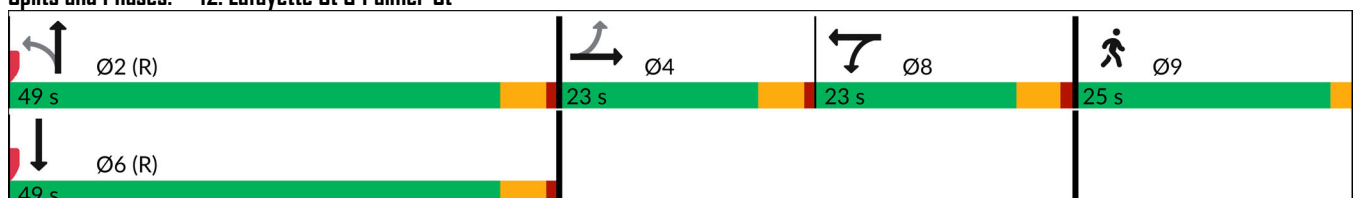
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Lafayette St & Palmer St



													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	180	10	110	15	30	20	175	610	10	5	410	135	
Future Volume (vph)	180	10	110	15	30	20	175	610	10	5	410	135	
Satd. Flow (prot)	0	1421	1446	0	1535	1516	1711	1572	0	0	1515	1473	
Flt Permitted		*0.950			0.984		0.950				0.993		
Satd. Flow (perm)	0	1414	1446	0	1535	1516	1711	1572	0	0	1506	1473	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	0	218	126	0	51	23	179	632	0	0	494	161	
Turn Type	Perm	NA	pt+ov	Split	NA	Prot	Prot	NA		Perm	NA	custom	
Protected Phases		4	4 5	3	3	3	5	2			6	4	9
Permitted Phases	4									6		6	
Total Split (s)	21.0	21.0		11.0	11.0	11.0	16.0	60.0		44.0	44.0	21.0	28.0
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0			5.0	5.0	
Act Effct Green (s)		16.0	32.9		6.0	6.0	15.9	68.4			47.5	68.5	
Actuated g/C Ratio		0.13	0.27		0.05	0.05	0.13	0.57			0.40	0.57	
v/c Ratio		1.16	0.32		0.67	0.31	0.79	0.71			0.83	0.19	
Control Delay (s/veh)		161.2	22.8		95.2	66.0	76.8	28.9			53.1	15.5	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0	
Total Delay (s/veh)		161.2	22.8		95.2	66.0	76.8	28.9			53.1	15.5	
LOS		F	C		F	E	E	C			D	B	
Approach Delay (s/veh)		110.5			86.1			39.5			43.8		
Approach LOS		F			F			D			D		
Queue Length 50th (ft)		~199	41		40	18	~162	433			~391	64	
Queue Length 95th (ft)		#340	68		#99	44	#309	#665			#555	158	
Internal Link Dist (ft)		770			537			1056			584		
Turn Bay Length (ft)			300			300	300					300	
Base Capacity (vph)		188	396		76	75	226	896			596	840	
Starvation Cap Reductn		0	0		0	0	0	0			0	0	
Spillback Cap Reductn		0	0		0	0	0	0			0	0	
Storage Cap Reductn		0	0		0	0	0	0			0	0	
Reduced v/c Ratio		1.16	0.32		0.67	0.31	0.79	0.71			0.83	0.19	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.16

Intersection Signal Delay (s/veh): 55.8

Intersection LOS: E

Intersection Capacity Utilization 84.2%

ICU Level of Service E

Analysis Period (min) 15

* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 16: Lafayette St & Loring Ave/West St

Ø2 (R) 60 s	Ø5 16 s	Ø6 (R) 44 s	Ø4 21 s	Ø3 11 s	Ø9 28 s
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Intersection										
Int Delay, s/veh	1.3									
Movement	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations										
Traffic Vol, veh/h	0	20	20	852	20	40	1000	160	0	0
Future Vol, veh/h	0	20	20	852	20	40	1000	160	0	0
Conflicting Peds, #/hr	0	5	20	0	10	0	0	20	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	-	None	-	-
Storage Length	0	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	92	92	91	91	91	92	92	92	92	92
Heavy Vehicles, %	2	2	3	3	3	3	3	3	3	3
Mvmt Flow	0	22	22	936	22	43	1087	174	0	0
Major/Minor	Minor1	Major1			Major2			Minor2		
Conflicting Flow All	1652	962	1281	0	0	968	0	0	-	670
Stage 1	1001	-	-	-	-	-	-	-	-	-
Stage 2	650	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.23	4.145	-	-	4.145	-	-	-	6.945
Critical Hdwy Stg 1	6.13	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.2285	-	-	2.2285	-	-	-	3.3285
Pot Cap-1 Maneuver	71	309	535	-	-	704	-	-	0	398
Stage 1	292	-	-	-	-	-	-	-	0	-
Stage 2	425	-	-	-	-	-	-	-	0	-
Platoon blocked, %				-	-		-	-		
Mov Cap-1 Maneuver	54	305	526	-	-	698	-	-	-	384
Mov Cap-2 Maneuver	54	-	-	-	-	-	-	-	-	-
Stage 1	263	-	-	-	-	-	-	-	-	-
Stage 2	356	-	-	-	-	-	-	-	-	-
Approach	EB	SE			NW			SW		
HCM Ctrl Dly, s/v	32.46	0.27			1.14			14.93		
HCM LOS	D							B		
Minor Lane/Major Mvmt	NWL	NWT	NWR	EBLn1	SEL	SET	SER	SWLn1		
Capacity (veh/h)	101	-	-	158	40	-	-	384		
HCM Lane V/C Ratio	0.062	-	-	0.172	0.042	-	-	0.057		
HCM Ctrl Dly (s/v)	10.5	0.9	-	32.5	12.1	0	-	14.9		
HCM Lane LOS	B	A	-	D	B	A	-	B		
HCM 95th %tile Q(veh)	0.2	-	-	0.6	0.1	-	-	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	0	5	10	5	70	0	635	0	0	630	5
Future Vol, veh/h	5	0	5	10	5	70	0	635	0	0	630	5
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
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	84	84	84	84	84	84	97	97	97	94	94	94
Heavy Vehicles, %	4	4	4	2	2	2	3	3	3	4	4	4
Mvmt Flow	6	0	6	12	6	83	0	655	0	0	670	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1350	1338	358	1000	1340	665	686	0	-	-	-	0
Stage 1	683	683	-	655	655	-	-	-	-	-	-	-
Stage 2	668	655	-	345	686	-	-	-	-	-	-	-
Critical Hdwy	7.36	6.56	6.96	7.33	6.53	6.23	4.145	-	-	-	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.16	5.56	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.538	4.038	3.338	3.519	4.019	3.319	2.2285	-	-	-	-	-
Pot Cap-1 Maneuver	116	150	635	209	152	459	900	-	0	0	-	-
Stage 1	402	444	-	454	462	-	-	-	0	0	-	-
Stage 2	443	458	-	644	447	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	90	149	624	206	151	455	892	-	-	-	-	-
Mov Cap-2 Maneuver	90	149	-	206	151	-	-	-	-	-	-	-
Stage 1	399	441	-	454	462	-	-	-	-	-	-	-
Stage 2	354	458	-	633	443	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	29.86		18.82		0		0	
HCM LOS	D		C					

Minor Lane/Major Mvmt	NBL	NBT	EBLnI	WBLnI	SBT	SBR
Capacity (veh/h)	892	-	157	361	-	-
HCM Lane V/C Ratio	-	-	0.076	0.28	-	-
HCM Ctrl Dly (s/v)	0	-	29.9	18.8	-	-
HCM Lane LOS	A	-	D	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	1.1	-	-

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	30	5	0	0	0	5	570	250	110	610	10	
Future Vol, veh/h	5	30	5	0	0	0	5	570	250	110	610	10	
Conflicting Peds, #/hr	10	0	10	10	0	10	20	0	50	50	0	20	
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	82	82	82	92	92	92	95	95	95	91	91	91	
Heavy Vehicles, %	4	4	4	0	0	0	3	3	3	5	5	5	
Mvmt Flow	6	37	6	0	0	0	5	600	263	121	670	11	
Major/Minor	Minor2						Major1		Major2				
Conflicting Flow All	1558	1861	706				701	0	0	913	0	0	
Stage 1	938	938	-				-	-	-	-	-	-	
Stage 2	621	924	-				-	-	-	-	-	-	
Critical Hdwy	6.44	6.54	6.24				4.13	-	-	4.15	-	-	
Critical Hdwy Stg 1	5.44	5.54	-				-	-	-	-	-	-	
Critical Hdwy Stg 2	5.44	5.54	-				-	-	-	-	-	-	
Follow-up Hdwy	3.536	4.036	3.336				2.227	-	-	2.245	-	-	
Pot Cap-1 Maneuver	122	72	433				891	-	-	734	-	-	
Stage 1	378	341	-				-	-	-	-	-	-	
Stage 2	532	346	-				-	-	-	-	-	-	
Platoon blocked, %								-	-				-
Mov Cap-1 Maneuver	86	0	421				876	-	-	734	-	-	
Mov Cap-2 Maneuver	86	0	-				-	-	-	-	-	-	
Stage 1	367	0	-				-	-	-	-	-	-	
Stage 2	384	0	-				-	-	-	-	-	-	
Approach	EB						NB		SB				
HCM Ctrl Dly, s/v	42.86						0.06		1.64				
HCM LOS	E												
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLnI	SBL	SBT	SBR						
Capacity (veh/h)	10	-	-	143	270	-	-						
HCM Lane V/C Ratio	0.006	-	-	0.342	0.165	-	-						
HCM Ctrl Dly (s/v)	9.1	0	-	42.9	10.9	0	-						
HCM Lane LOS	A	A	-	E	B	A	-						
HCM 95th %tile Q(veh)	0	-	-	1.4	0.6	-	-						

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	0	5	5	0	25	5	760	15	10	525	5
Future Vol, veh/h	5	0	5	5	0	25	5	760	15	10	525	5
Conflicting Peds, #/hr	20	0	20	20	0	20	20	0	20	20	0	20
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	83	83	83	78	78	78	94	94	94	95	95	95
Heavy Vehicles, %	10	10	10	0	0	0	4	4	4	6	6	6
Mvmt Flow	6	0	6	6	0	32	5	809	16	11	553	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1435	1451	595	1441	1446	856	578	0	0	844	0	0
Stage 1	596	596	-	847	847	-	-	-	-	-	-	-
Stage 2	839	855	-	594	599	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.1	6.5	6.2	4.14	-	-	4.16	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.5	4	3.3	2.236	-	-	2.254	-	-
Pot Cap-1 Maneuver	107	126	489	112	133	360	986	-	-	775	-	-
Stage 1	476	479	-	359	381	-	-	-	-	-	-	-
Stage 2	349	364	-	495	494	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	91	118	473	103	124	348	969	-	-	761	-	-
Mov Cap-2 Maneuver	91	118	-	103	124	-	-	-	-	-	-	-
Stage 1	459	461	-	349	370	-	-	-	-	-	-	-
Stage 2	308	354	-	471	475	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	30.65		22.06		0.06		0.18					
HCM LOS	D		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLnI	WBLnI	SBL	SBT	SBR				
Capacity (veh/h)	11	-	-	152	249	33	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.079	0.154	0.014	-	-				
HCM Ctrl Dly (s/v)	8.7	0	-	30.6	22.1	9.8	0	-				
HCM Lane LOS	A	A	-	D	C	A	A	-				
HCM 95th %tile D(veh)	0	-	-	0.3	0.5	0	-	-				

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	5	25	5	5	20	15	725	10	5	515	15
Future Vol, veh/h	20	5	25	5	5	20	15	725	10	5	515	15
Conflicting Peds, #/hr	10	0	10	10	0	10	12	0	12	12	0	12
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	90	90	90	75	75	75	97	97	97	90	90	90
Heavy Vehicles, %	6	6	6	2	2	2	5	5	5	6	6	6
Mvmt Flow	22	6	28	7	7	27	15	747	10	6	572	17
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1395	1404	603	1392	1408	775	601	0	0	770	0	0
Stage 1	604	604	-	796	796	-	-	-	-	-	-	-
Stage 2	792	801	-	596	612	-	-	-	-	-	-	-
Critical Hdwy	7.16	6.56	6.26	7.12	6.52	6.22	4.15	-	-	4.16	-	-
Critical Hdwy Stg 1	6.16	5.56	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.16	5.56	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.554	4.054	3.354	3.518	4.018	3.318	2.245	-	-	2.254	-	-
Pot Cap-1 Maneuver	116	137	492	119	139	398	962	-	-	827	-	-
Stage 1	479	482	-	381	399	-	-	-	-	-	-	-
Stage 2	377	391	-	490	484	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	97	129	483	102	131	391	952	-	-	818	-	-
Mov Cap-2 Maneuver	97	129	-	102	131	-	-	-	-	-	-	-
Stage 1	469	472	-	366	384	-	-	-	-	-	-	-
Stage 2	332	376	-	448	474	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	36.46			25.36			0.18			0.09		
HCM LOS	E			D								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLnI	WBLnI	SBL	SBT	SBR				
Capacity (veh/h)	36	-	-	169	217	17	-	-				
HCM Lane V/C Ratio	0.016	-	-	0.329	0.185	0.007	-	-				
HCM Ctrl Dly (s/v)	8.8	0	-	36.5	25.4	9.4	0	-				
HCM Lane LOS	A	A	-	E	D	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	1.3	0.7	0	-	-				

Intersection						
Int Delay, s/veh	6.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	455	745	0	0	875
Future Vol, veh/h	0	455	745	0	0	875
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	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	474	776	0	0	911
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	388	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.33	-	-	-	-
Pot Cap-1 Maneuver	0	608	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	608	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	28.72	0		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	WBLnl	SBT			
Capacity (veh/h)	-	608	-			
HCM Lane V/C Ratio	-	0.78	-			
HCM Ctrl Dly (s/v)	-	28.7	-			
HCM Lane LOS	-	D	-			
HCM 95th %tile Q(veh)	-	7.4	-			

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	0	5	5	0	25	5	760	15	10	525	5
Future Vol, veh/h	5	0	5	5	0	25	5	760	15	10	525	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	83	83	83	78	78	78	94	94	94	95	95	95
Heavy Vehicles, %	10	10	10	0	0	0	4	4	4	6	6	6
Mvmt Flow	6	0	6	6	0	32	5	809	16	11	553	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1395	1411	555	1401	1406	816	558	0	0	824	0	0
Stage 1	576	576	-	827	827	-	-	-	-	-	-	-
Stage 2	819	835	-	574	579	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.1	6.5	6.2	4.14	-	-	4.16	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.5	4	3.3	2.236	-	-	2.254	-	-
Pot Cap-1 Maneuver	114	133	516	119	140	380	1003	-	-	789	-	-
Stage 1	489	489	-	369	389	-	-	-	-	-	-	-
Stage 2	358	372	-	508	504	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	101	129	516	114	136	380	1003	-	-	789	-	-
Mov Cap-2 Maneuver	101	129	-	114	136	-	-	-	-	-	-	-
Stage 1	479	480	-	365	385	-	-	-	-	-	-	-
Stage 2	325	368	-	492	494	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	27.87		20.3		0.06		0.18					
HCM LOS	D		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLnI	WBLnI	SBL	SBT	SBR				
Capacity (veh/h)	11	-	-	169	274	33	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.071	0.141	0.013	-	-				
HCM Ctrl Dly (s/v)	8.6	0	-	27.9	20.3	9.6	0	-				
HCM Lane LOS	A	A	-	D	C	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.5	0	-	-				

Part 6: 2040 Build Conditions: Weekday PM Peak-Hour LOS and Delays

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	30	610	35	10	800	10	0	0	0	15	30	150	
Future Volume (vph)	30	610	35	10	800	10	0	0	0	15	30	150	
Satd. Flow (prot)	0	1559	0	0	1570	0	0	0	0	0	1356	0	
Flt Permitted		0.934			0.989						0.996		
Satd. Flow (perm)	0	1459	0	0	1554	0	0	0	0	0	1353	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	0	775	0	0	882	0	0	0	0	0	235	0	
Turn Type	Perm	NA		Perm	NA					Perm	NA		
Protected Phases		4			8						6		9
Permitted Phases	4			8						6			
Total Split (s)	94.0	94.0		94.0	94.0					31.0	31.0		25.0
Total Lost Time (s)		5.0			5.0						5.0		
Act Effct Green (s)		99.3			99.3						30.7		
Actuated g/C Ratio		0.66			0.66						0.20		
v/c Ratio		0.80			0.86						0.85		
Control Delay (s/veh)		28.4			11.8						83.6		
Queue Delay		6.9			0.8						0.0		
Total Delay (s/veh)		35.2			12.6						83.6		
LOS		D			B						F		
Approach Delay (s/veh)		35.2			12.6						83.6		
Approach LOS		D			B						F		
Queue Length 50th (ft)		455			314						214		
Queue Length 95th (ft)		#830			m108						#367		
Internal Link Dist (ft)		2078			541			138			342		
Turn Bay Length (ft)													
Base Capacity (vph)		966			1029						276		
Starvation Cap Reductn		0			30						0		
Spillback Cap Reductn		151			0						0		
Storage Cap Reductn		0			0						0		
Reduced v/c Ratio		0.95			0.88						0.85		

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 144 (96%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay (s/veh): 30.7

Intersection LOS: C

Intersection Capacity Utilization 79.9%

ICU Level of Service D

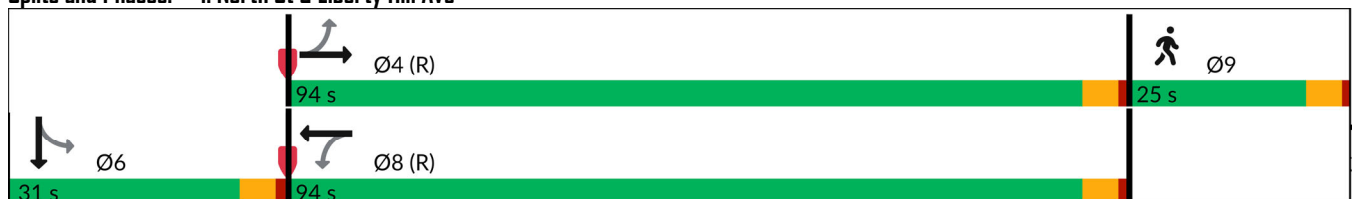
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: North St & Liberty Hill Ave



													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	10	610	25	15	705	35	70	60	30	135	130	20	
Future Volume (vph)	10	610	25	15	705	35	70	60	30	135	130	20	
Satd. Flow (prot)	1711	1564	0	1711	1562	0	0	1493	0	0	1753	0	
Flt Permitted	0.061			0.119				0.979			0.977		
Satd. Flow (perm)	110	1564	0	214	1562	0	0	1493	0	0	1753	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	11	690	0	16	779	0	0	188	0	0	324	0	
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA		
Protected Phases		4			8		2	2		6	6		9
Permitted Phases	4			8									
Total Split (s)	73.0	73.0		73.0	73.0		22.0	22.0		30.0	30.0		25.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0			6.0		
Act Effct Green (s)	67.0	67.0		67.0	67.0			22.9			27.1		
Actuated g/C Ratio	0.45	0.45		0.45	0.45			0.15			0.18		
v/c Ratio	0.22	0.99		0.17	1.12			0.82			1.03		
Control Delay (s/veh)	29.7	53.8		33.7	107.7			88.6			115.4		
Queue Delay	0.0	15.1		0.0	0.0			0.0			0.0		
Total Delay (s/veh)	29.7	68.9		33.7	107.7			88.6			115.4		
LOS	C	E		C	F			F			F		
Approach Delay (s/veh)		68.3			106.2			88.6			115.4		
Approach LOS		E			F			F			F		
Queue Length 50th (ft)	3	664		9	~857			~220			~373		
Queue Length 95th (ft)	m5	#928		m24	#1111			#352			#553		
Internal Link Dist (ft)		541			1292			401			319		
Turn Bay Length (ft)	100			100									
Base Capacity (vph)	49	698		95	697			228			316		
Starvation Cap Reductn	0	36		0	0			0			0		
Spillback Cap Reductn	0	0		0	0			0			0		
Storage Cap Reductn	0	0		0	0			0			0		
Reduced v/c Ratio	0.22	1.04		0.17	1.12			0.82			1.03		

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green, Master Intersection

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.12

Intersection Signal Delay (s/veh): 92.8

Intersection LOS: F

Intersection Capacity Utilization 69.8%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: School St/Orne St & North St

Ø2	Ø6	Ø4 (R)	Ø9
22 s	30 s	73 s	25 s
		Ø8 (R)	
		73 s	

Lane Group	SET	SER	NWL	NWT	NEL	NER	Ø4	Ø9
Lane Configurations								
Traffic Volume (vph)	750	30	445	715	0	170		
Future Volume (vph)	750	30	445	715	0	170		
Satd. Flow (prot)	1789	0	1711	1801	0	1558		
Flt Permitted			0.950					
Satd. Flow (perm)	1789	0	1711	1801	0	1501		
Satd. Flow (RTOR)								
Lane Group Flow (vph)	848	0	468	753	0	200		
Turn Type	NA		Prot	NA		pm+ov		
Protected Phases	6		5	2		5	4	9
Permitted Phases						4		
Total Split (s)	51.0		50.0	101.0		50.0	23.0	26.0
Total Lost Time (s)	4.0		5.0	4.0		5.0		
Act Effct Green (s)	80.4		45.0	132.0		45.0		
Actuated g/C Ratio	0.54		0.30	0.88		0.30		
v/c Ratio	0.89		0.91	0.48		0.43		
Control Delay (s/veh)	22.7		73.8	4.8		45.7		
Queue Delay	0.0		0.0	0.0		0.0		
Total Delay (s/veh)	22.7		73.8	4.8		45.7		
LOS	C		E	A		D		
Approach Delay (s/veh)	22.7			31.2	45.7			
Approach LOS	C			C	D			
Queue Length 50th (ft)	~669		443	216		158		
Queue Length 95th (ft)	m#881		#652	285		222		
Internal Link Dist (ft)	1292			252	419			
Turn Bay Length (ft)								
Base Capacity (vph)	958		513	1584		467		
Starvation Cap Reductn	0		0	0		0		
Spillback Cap Reductn	0		0	0		0		
Storage Cap Reductn	0		0	0		0		
Reduced v/c Ratio	0.89		0.91	0.48		0.43		

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 36 (24%), Referenced to phase 2:NWT and 6:SET, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay (s/veh): 29.3

Intersection LOS: C

Intersection Capacity Utilization 83.0%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mason St & North St

Ø2 (R) 101 s	Ø6 (R) 51 s	Ø5 50 s	Ø4 23 s	Ø9 26 s
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	105	100	40	0	0	0	0	485	45	135	580	70	
Future Volume (vph)	105	100	40	0	0	0	0	485	45	135	580	70	
Satd. Flow (prot)	0	1536	1531	0	0	0	0	1569	0	1711	1545	0	
Flt Permitted		0.975								0.193			
Satd. Flow (perm)	0	1536	1444	0	0	0	0	1569	0	348	1545	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	0	230	45	0	0	0	0	570	0	145	699	0	
Turn Type	Split	NA	Perm					NA		pm+pt	NA		
Protected Phases	4	4						2		1	6		9
Permitted Phases			4							6			
Total Split (s)	25.0	25.0	25.0					45.0		11.0	56.0		29.0
Total Lost Time (s)		5.0	5.0					5.0		4.0	5.0		
Act Effct Green (s)		19.0	19.0					46.8		59.6	58.6		
Actuated g/C Ratio		0.17	0.17					0.43		0.54	0.53		
v/c Ratio		0.87	0.18					0.86		0.51	0.85		
Control Delay (s/veh)		74.7	40.3					42.3		31.1	37.0		
Queue Delay		0.0	0.3					0.3		0.0	5.2		
Total Delay (s/veh)		74.7	40.5					42.6		31.1	42.2		
LOS		E	D					D		C	D		
Approach Delay (s/veh)		69.1						42.6			40.3		
Approach LOS		E						D			D		
Queue Length 50th (ft)		158	27					~405		27	478		
Queue Length 95th (ft)		#283	60					m#608		m#113	m#671		
Internal Link Dist (ft)		473			358			431			307		
Turn Bay Length (ft)			75										
Base Capacity (vph)		279	262					666		285	823		
Starvation Cap Reductn		0	0					6		0	0		
Spillback Cap Reductn		0	49					0		0	80		
Storage Cap Reductn		0	0					0		0	0		
Reduced v/c Ratio		0.82	0.21					0.86		0.51	0.94		

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 99 (90%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay (s/veh): 45.8

Intersection LDS: D

Intersection Capacity Utilization 65.2%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

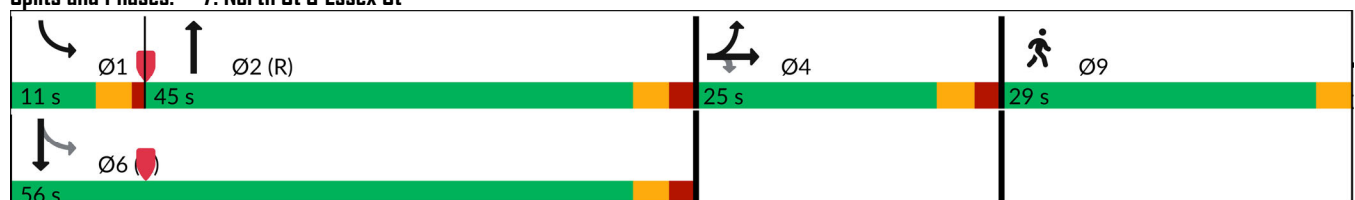
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: North St & Essex St



													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	5	95	15	35	0	355	0	170	40	400	225	0	
Future Volume (vph)	5	95	15	35	0	355	0	170	40	400	225	0	
Satd. Flow (prot)	0	1556	0	0	1275	0	0	1537	0	0	1527	0	
Flt Permitted		0.931			0.881						0.680		
Satd. Flow (perm)	0	1450	0	0	1124	0	0	1537	0	0	1062	0	
Satd. Flow (RTOR)					386								
Lane Group Flow (vph)	0	158	0	0	424	0	0	221	0	0	687	0	
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA		
Protected Phases		4			8			2			6		9
Permitted Phases	4			8						6			
Total Split (s)	23.0	23.0		23.0	23.0			62.0		62.0	62.0		25.0
Total Lost Time (s)		5.0			5.0			5.0			5.0		
Act Effct Green (s)		15.7			15.7			79.3			79.3		
Actuated g/C Ratio		0.14			0.14			0.72			0.72		
v/c Ratio		0.76			0.86			0.20			0.90		
Control Delay (s/veh)		68.5			25.4			7.8			24.6		
Queue Delay		0.0			2.0			0.0			8.4		
Total Delay (s/veh)		68.5			27.3			7.8			33.1		
LOS		E			C			A			C		
Approach Delay (s/veh)		68.5			27.3			7.8			33.1		
Approach LOS		E			C			A			C		
Queue Length 50th (ft)		107			24			38			160		
Queue Length 95th (ft)		139			#201			135			m#812		
Internal Link Dist (ft)		246			238			211			431		
Turn Bay Length (ft)													
Base Capacity (vph)		237			506			1107			765		
Starvation Cap Reductn		0			0			0			62		
Spillback Cap Reductn		0			23			94			0		
Storage Cap Reductn		0			0			0			0		
Reduced v/c Ratio		0.67			0.88			0.22			0.98		

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 108 (98%), Referenced to phase 6:SBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay (s/veh): 31.4

Intersection LOS: C

Intersection Capacity Utilization 90.5%

ICU Level of Service E

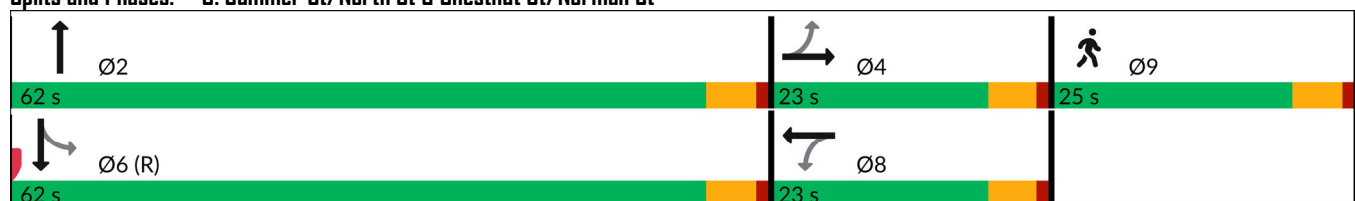
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Summer St/North St & Chestnut St/Norman St



													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	40	215	210	90	310	55	190	440	160	80	255	70	
Future Volume (vph)	40	215	210	90	310	55	190	440	160	80	255	70	
Satd. Flow (prot)	1711	1801	1531	1711	1751	0	1711	3421	1531	1711	1801	1531	
Flt Permitted	0.950			0.950			0.950			0.950			
Satd. Flow (perm)	1711	1801	1465	1711	1751	0	1711	3421	1424	1711	1801	1405	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	45	242	236	99	401	0	200	463	168	88	280	77	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	
Protected Phases	7	4		3	8		5	2		1	6		9
Permitted Phases			4						2			6	
Total Split (s)	12.0	40.0	40.0	18.0	46.0		28.0	41.0	41.0	21.0	34.0	34.0	30.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	
Act Effct Green (s)	6.0	30.4	30.4	11.4	38.3		20.5	45.1	45.1	15.0	39.7	39.7	
Actuated g/C Ratio	0.04	0.20	0.20	0.08	0.26		0.14	0.30	0.30	0.10	0.26	0.26	
v/c Ratio	0.66	0.66	0.79	0.76	0.90		0.86	0.45	0.39	0.51	0.59	0.21	
Control Delay (s/veh)	111.3	63.7	75.9	101.6	77.6		75.0	31.7	33.0	75.4	58.7	51.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	111.3	63.7	75.9	101.6	77.6		75.0	31.7	33.0	75.4	58.7	51.9	
LDS	F	E	E	F	E		E	C	C	E	E	D	
Approach Delay (s/veh)		73.3			82.3			42.4			60.8		
Approach LDS		E			F			D			E		
Queue Length 50th (ft)	44	214	215	96	376		198	209	141	83	267	66	
Queue Length 95th (ft)	#109	305	313	#188	#553		m#277	m261	m201	145	#418	118	
Internal Link Dist (ft)		193			332			528			749		
Turn Bay Length (ft)	100		150				200		200	200		200	
Base Capacity (vph)	68	408	332	136	466		250	1029	428	171	476	371	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0	
Reduced v/c Ratio	0.66	0.59	0.71	0.73	0.86		0.80	0.45	0.39	0.51	0.59	0.21	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 96 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay (s/veh): 61.7

Intersection LDS: E

Intersection Capacity Utilization 68.9%

ICU Level of Service C

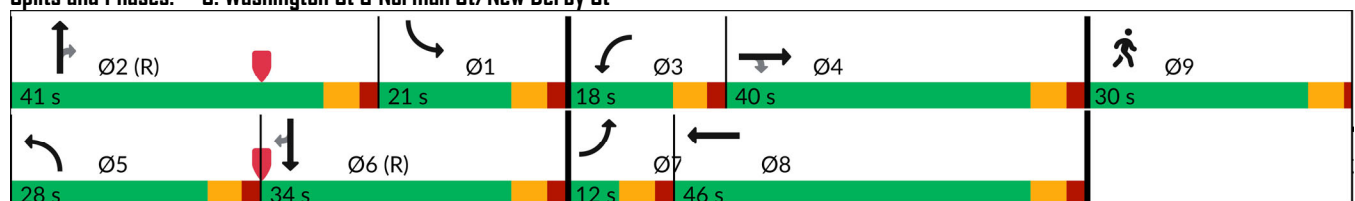
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Washington St & Norman St/New Derby St



													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	155	260	370	15	200	250	130	445	45	140	370	30	
Future Volume (vph)	155	260	370	15	200	250	130	445	45	140	370	30	
Satd. Flow (prot)	1711	1801	1531	0	1761	1501	1694	3319	0	1728	1818	1546	
Flt Permitted	0.950				0.957		0.950			0.950			
Satd. Flow (perm)	1711	1801	1454	0	1690	1443	1694	3319	0	1728	1818	1461	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	161	271	385	0	250	291	148	557	0	152	402	33	
Turn Type	Prot	NA	pm+ov	Perm	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	
Protected Phases	7	4	5		8	1	5	2		1	6	7	9
Permitted Phases			4	8		8						6	
Total Split (s)	21.0	51.0	21.0	30.0	30.0	23.0	21.0	41.0		23.0	43.0	21.0	35.0
Total Lost Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0	
Act Effct Green (s)	14.0	44.0	58.2		23.0	38.4	14.2	41.6		15.4	42.8	56.8	
Actuated g/C Ratio	0.09	0.29	0.39		0.15	0.26	0.09	0.28		0.10	0.29	0.38	
v/c Ratio	1.01	0.51	0.67		0.97	0.78	0.93	0.61		0.86	0.78	0.06	
Control Delay (s/veh)	140.1	48.2	30.1		109.8	45.3	119.3	53.2		91.1	38.3	18.3	
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	
Total Delay (s/veh)	140.1	48.2	30.1		109.8	45.3	119.3	53.2		91.1	38.3	18.3	
LDS	F	D	C		F	D	F	D		F	D	B	
Approach Delay (s/veh)		57.8			75.1			67.0			50.8		
Approach LDS		E			E			E			D		
Queue Length 50th (ft)	~162	221	158		247	158	146	268		134	402	21	
Queue Length 95th (ft)	#319	317	273		#394	214	#278	329		m#253	#582	m31	
Internal Link Dist (ft)		253			828			250			528		
Turn Bay Length (ft)						300	300						
Base Capacity (vph)	159	528	571		259	381	160	920		184	518	560	
Starvation Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Spillback Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Storage Cap Reductn	0	0	0		0	0	0	0		0	0	0	
Reduced v/c Ratio	1.01	0.51	0.67		0.97	0.76	0.93	0.61		0.83	0.78	0.06	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 9 (6%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay (s/veh): 62.2

Intersection LDS: E

Intersection Capacity Utilization 75.0%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Canal St & Mill St & Washington St

	Ø1		Ø2 (R)		Ø4		Ø9
23 s		41 s		51 s		35 s	
	Ø5		Ø6 (R)		Ø7		Ø8
21 s		43 s		21 s		30 s	

														
Lane Group	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SER	SWL2	SWL	SWR	SWR2	Ø9
Lane Configurations														
Traffic Volume (vph)	330	280	10	30	25	40	420	10	345	5	10	5	5	
Future Volume (vph)	330	280	10	30	25	40	420	10	345	5	10	5	5	
Satd. Flow (prot)	1678	1511	0	0	0	1728	1584	0	1558	0	1565	0	0	
Flt Permitted	0.443					0.950					0.971			
Satd. Flow (perm)	782	1511	0	0	0	1728	1584	0	1460	0	1565	0	0	
Satd. Flow (RTOR)									*100					
Lane Group Flow (vph)	351	341	0	0	0	68	453	0	401	0	25	0	0	
Turn Type	pm+pt	NA			Prot	Prot	NA		Perm	Prot	Prot			
Protected Phases	5	2			1	1	6			7	7			9
Permitted Phases	2								4					
Total Split (s)	16.0	41.5			16.0	16.0	41.5		26.0	12.5	12.5			24.0
Total Lost Time (s)	6.0	8.0				8.0	8.0		5.0		7.5			
Act Effct Green (s)	53.2	51.2				8.1	48.1		21.0		5.0			
Actuated g/C Ratio	0.44	0.43				0.07	0.40		0.18		0.04			
v/c Ratio	0.83	0.53				0.58	0.71		1.19		0.38			
Control Delay (s/veh)	42.3	22.7				74.6	42.6		142.6		73.0			
Queue Delay	0.0	0.3				0.0	1.4		1.0		9.9			
Total Delay (s/veh)	42.3	22.9				74.6	44.0		143.6		82.9			
LOS	D	C				E	D		F		F			
Approach Delay (s/veh)		32.8					48.0				82.9			
Approach LOS		C					D				F			
Queue Length 50th (ft)	~299	249				52	~374		~307		19			
Queue Length 95th (ft)	m#365	m#380				#114	#580		#469		50			
Internal Link Dist (ft)		285					738				98			
Turn Bay Length (ft)	200					200								
Base Capacity (vph)	421	644				117	635		338		65			
Starvation Cap Reductn	0	48				0	0		0		0			
Spillback Cap Reductn	0	0				0	65		28		21			
Storage Cap Reductn	0	0				0	0		0		0			
Reduced v/c Ratio	0.83	0.57				0.58	0.79		1.29		0.57			

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 18 (15%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.19

Intersection Signal Delay (s/veh): 65.5

Intersection LOS: E

Intersection Capacity Utilization 72.6%

ICU Level of Service C

Analysis Period (min) 15

* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.

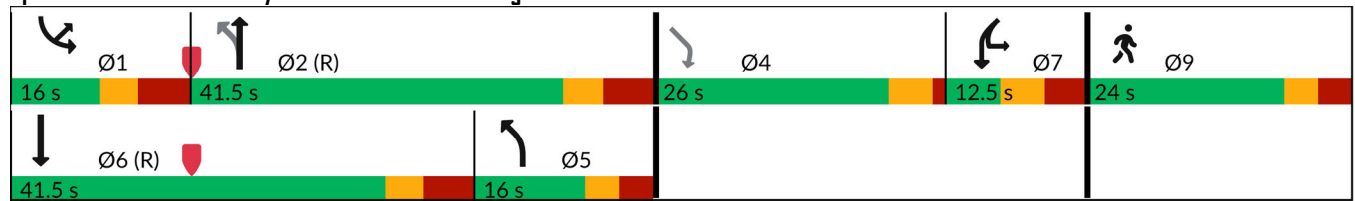
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Lafayette St & Dow St & Washington St



													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	5	0	10	160	0	90	5	585	0	0	730	10	
Future Volume (vph)	5	0	10	160	0	90	5	585	0	0	730	10	
Satd. Flow (prot)	0	1346	0	0	1374	0	0	1576	0	0	1571	0	
Flt Permitted		0.916			0.969			0.994					
Satd. Flow (perm)	0	1243	0	0	1318	0	0	1566	0	0	1571	0	
Satd. Flow (RTOR)		109			109						1		
Lane Group Flow (vph)	0	24	0	0	266	0	0	686	0	0	788	0	
Turn Type	Perm	NA		Split	NA		Perm	NA			NA		
Protected Phases		4		8	8			2			6		9
Permitted Phases	4						2						
Total Split (s)	23.0	23.0		23.0	23.0		49.0	49.0			49.0		25.0
Total Lost Time (s)		5.0			5.0			5.0			5.0		
Act Effct Green (s)		5.5			22.2			76.5			76.5		
Actuated g/C Ratio		0.05			0.19			0.64			0.64		
v/c Ratio		0.15			0.78			0.69			0.79		
Control Delay (s/veh)		2.0			42.0			23.5			17.9		
Queue Delay		0.0			0.1			0.2			5.8		
Total Delay (s/veh)		2.0			42.1			23.7			23.7		
LOS		A			D			C			C		
Approach Delay (s/veh)		2.0			42.1			23.7			23.7		
Approach LOS		A			D			C			C		
Queue Length 50th (ft)		0			118			319			273		
Queue Length 95th (ft)		0			203			#815			m#827		
Internal Link Dist (ft)		64			604			261			285		
Turn Bay Length (ft)													
Base Capacity (vph)		279			354			999			1002		
Starvation Cap Reductn		0			0			0			163		
Spillback Cap Reductn		2			2			33			0		
Storage Cap Reductn		0			0			0			0		
Reduced v/c Ratio		0.09			0.76			0.71			0.94		

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay (s/veh): 26.2

Intersection LOS: C

Intersection Capacity Utilization 69.1%

ICU Level of Service C

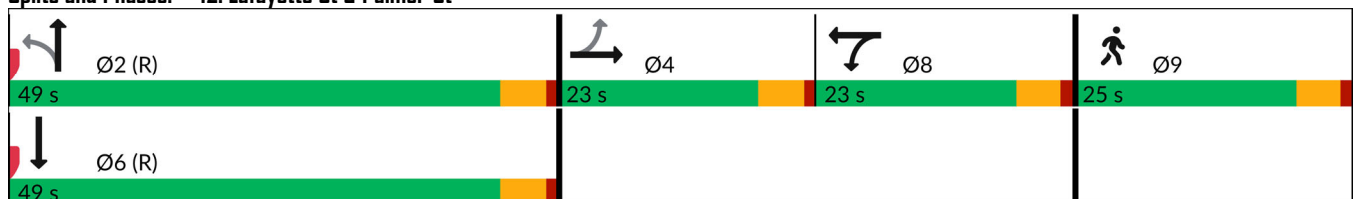
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Lafayette St & Palmer St



													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	210	25	80	25	25	10	165	560	20	5	375	180	
Future Volume (vph)	210	25	80	25	25	10	165	560	20	5	375	180	
Satd. Flow (prot)	0	1479	1501	0	1569	1561	1694	1552	0	0	1559	1516	
Flt Permitted		*0.900			0.976		0.950				*0.900		
Satd. Flow (perm)	0	1391	1501	0	1569	1561	1694	1552	0	0	1404	1516	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	0	294	100	0	68	14	179	631	0	0	437	207	
Turn Type	Perm	NA	pt+ov	Split	NA	Prot	Prot	NA		Perm	NA	custom	
Protected Phases		4	4 5	3	3	3	5	2			6	4	9
Permitted Phases	4									6		6	
Total Split (s)	31.0	31.0		14.0	14.0	14.0	20.0	67.0		47.0	47.0	31.0	28.0
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0			5.0	5.0	
Act Effct Green (s)		26.0	46.0		8.6	8.6	15.0	73.6			53.6	79.6	
Actuated g/C Ratio		0.19	0.33		0.06	0.06	0.11	0.53			0.38	0.57	
v/c Ratio		1.14	0.20		0.71	0.15	0.99	0.77			0.81	0.24	
Control Delay (s/veh)		149.0	35.2		100.1	65.5	125.6	37.9			54.7	10.6	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0	
Total Delay (s/veh)		149.0	35.2		100.1	65.5	125.6	37.9			54.7	10.6	
LOS		F	D		F	E	F	D			D	B	
Approach Delay (s/veh)		120.1			94.2			57.3			40.5		
Approach LOS		F			F			E			D		
Queue Length 50th (ft)		~311	66		62	12	165	532			~428	68	
Queue Length 95th (ft)		#417	99		#94	29	#324	#781			#607	100	
Internal Link Dist (ft)		770			537			1056			584		
Turn Bay Length (ft)			300			300	300					300	
Base Capacity (vph)		258	493		100	100	181	815			537	861	
Starvation Cap Reductn		0	0		0	0	0	0			0	0	
Spillback Cap Reductn		0	0		0	0	0	0			0	0	
Storage Cap Reductn		0	0		0	0	0	0			0	0	
Reduced v/c Ratio		1.14	0.20		0.68	0.14	0.99	0.77			0.81	0.24	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.14

Intersection Signal Delay (s/veh): 66.1

Intersection LOS: E

Intersection Capacity Utilization 82.8%

ICU Level of Service E

Analysis Period (min) 15

* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 16: Lafayette St & Loring Ave/West St

Ø2 (R) 67 s	Ø4 31 s	Ø3 14 s	Ø9 28 s
Ø6 (R) 47 s	Ø5 20 s		

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø9
Lane Configurations													
Traffic Volume (vph)	45	0	105	10	20	90	100	555	0	0	690	220	
Future Volume (vph)	45	0	105	10	20	90	100	555	0	0	690	220	
Satd. Flow (prot)	1678	0	1501	0	1653	0	1728	1818	0	0	3267	0	
Flt Permitted	0.950				0.996		*0.750						
Satd. Flow (perm)	1678	0	1402	0	1653	0	1364	1818	0	0	3267	0	
Satd. Flow (RTOR)													
Lane Group Flow (vph)	51	0	118	0	223	0	106	590	0	0	1034	0	
Turn Type	Prot		pm+av	Split	NA		pm+pt	NA			NA		
Protected Phases	7		5	8	8		5	2			6		9
Permitted Phases			7				2						
Total Split (s)	13.0		13.0	22.0	22.0		13.0	48.0			35.0		27.0
Total Lost Time (s)	6.0		6.0		6.0		6.0	6.0			6.0		
Act Effct Green (s)	7.0		12.6		16.0		60.8	60.8			47.8		
Actuated g/C Ratio	0.06		0.11		0.15		0.55	0.55			0.43		
v/c Ratio	0.48		0.71		0.93		0.14	0.59			0.73		
Control Delay (s/veh)	65.3		54.1		89.8		12.1	15.7			33.5		
Queue Delay	0.0		0.0		0.0		0.0	0.0			0.0		
Total Delay (s/veh)	65.3		54.1		89.8		12.1	15.7			33.5		
LOS	E		D		F		B	B			C		
Approach Delay (s/veh)		57.5			89.8			15.2			33.5		
Approach LOS		E			F			B			C		
Queue Length 50th (ft)	35		55		158		21	124			265		
Queue Length 95th (ft)	75		#106		137		m32	m#332			#578		
Internal Link Dist (ft)		297			159			120			231		
Turn Bay Length (ft)			100										
Base Capacity (vph)	106		166		240		776	1005			1419		
Starvation Cap Reductn	0		0		0		0	0			0		
Spillback Cap Reductn	0		0		0		0	0			0		
Storage Cap Reductn	0		0		0		0	0			0		
Reduced v/c Ratio	0.48		0.71		0.93		0.14	0.59			0.73		

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay (s/veh): 35.3

Intersection LOS: D

Intersection Capacity Utilization 62.4%

ICU Level of Service B

Analysis Period (min) 15

* User Entered Value

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: North St & Rte 107 ramp to Rte 114/Federal St

 Ø2 (R)	 Ø8	 Ø7	 Ø9
48 s	22 s	13 s	27 s
 Ø6 (R)	 Ø5		
35 s	13 s		

Intersection										
Int Delay, s/veh	4.5									
Movement	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR
Lane Configurations										
Traffic Vol, veh/h	5	25	15	910	15	20	1100	125	0	0
Future Vol, veh/h	5	25	15	910	15	20	1100	125	0	0
Conflicting Peds, #/hr	0	5	20	0	10	0	0	20	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	-	None	-	-
Storage Length	0	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	67	67	91	91	91	91	91	91	71	71
Heavy Vehicles, %	8	8	2	2	2	2	2	2	5	5
Mvmt Flow	7	37	16	1000	16	22	1209	137	0	0

Major/Minor	Minor1		Major1		Major2			Minor2		
Conflicting Flow All	1720	1023	1366	0	0	1026	0	0	-	713
Stage 1	1051	-	-	-	-	-	-	-	-	-
Stage 2	668	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.42	6.32	4.13	-	-	4.13	-	-	-	6.975
Critical Hdwy Stg 1	6.22	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.62	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2	2	2.219	-	-	2.219	-	-	-	3.3475
Pot Cap-1 Maneuver	81	392	501	-	-	674	-	-	0	370
Stage 1	386	-	-	-	-	-	-	-	0	-
Stage 2	630	-	-	-	-	-	-	-	0	-
Platoon blocked, %				-	-		-	-		
Mov Cap-1 Maneuver	63	386	492	-	-	668	-	-	-	357
Mov Cap-2 Maneuver	63	-	-	-	-	-	-	-	-	-
Stage 1	354	-	-	-	-	-	-	-	-	-
Stage 2	540	-	-	-	-	-	-	-	-	-

Approach	EB		SE		NW			SW		
HCM Ctrl Dly, s/v	129.33		0.2		0.65			15.96		
HCM LOS	F							C		

Minor Lane/Major Mvmt	NWL	NWT	NWR	EBLn1	SEL	SET	SER	SWLn1
Capacity (veh/h)	51	-	-	92	29	-	-	357
HCM Lane V/C Ratio	0.033	-	-	0.814	0.034	-	-	0.079
HCM Ctrl Dly (s/v)	10.6	0.5	-	129.3	12.6	0	-	16
HCM Lane LOS	B	A	-	F	B	A	-	C
HCM 95th %tile Q(veh)	0.1	-	-	4.3	0.1	-	-	0.3

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	20	0	115	0	590	0	0	760	5
Future Vol, veh/h	0	0	0	20	0	115	0	590	0	0	760	5
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
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	84	84	84	77	77	77	93	93	93	90	90	90
Heavy Vehicles, %	0	0	0	1	1	1	1	1	1	2	2	2
Mvmt Flow	0	0	0	26	0	149	0	634	0	0	844	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1502	1492	445	1067	1494	644	860	0	-	-	-	0
Stage 1	857	857	-	634	634	-	-	-	-	-	-	-
Stage 2	644	634	-	432	860	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.5	6.9	7.315	6.515	6.215	4.115	-	-	-	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.115	5.515	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.515	5.515	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5095	4.0095	3.3095	2.2095	-	-	-	-	-
Pot Cap-1 Maneuver	93	125	566	189	123	474	785	-	0	0	-	-
Stage 1	322	377	-	468	474	-	-	-	0	0	-	-
Stage 2	465	476	-	575	374	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	62	124	556	187	122	470	778	-	-	-	-	-
Mov Cap-2 Maneuver	62	124	-	187	122	-	-	-	-	-	-	-
Stage 1	320	373	-	468	474	-	-	-	-	-	-	-
Stage 2	314	476	-	570	370	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	0		22.02		0		0	
HCM LOS	A		C					

Minor Lane/Major Mvmt	NBL	NBT	EBLnI	WBLnI	SBT	SBR
Capacity (veh/h)	778	-	-	384	-	-
HCM Lane V/C Ratio	-	-	-	0.457	-	-
HCM Ctrl Dly (s/v)	0	-	0	22	-	-
HCM Lane LOS	A	-	A	C	-	-
HCM 95th %tile Q(veh)	0	-	-	2.3	-	-

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Traffic Vol, veh/h	10	15	5	0	0	0	10	575	210	90	770	10
Future Vol, veh/h	10	15	5	0	0	0	10	575	210	90	770	10
Conflicting Peds, #/hr	10	0	10	10	0	10	20	0	50	50	0	20
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	61	61	61	92	92	92	88	88	88	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	2	2	2	3	3	3
Mvmt Flow	16	25	8	0	0	0	11	653	239	97	828	11
Major/Minor	Minor2						Major1		Major2			
Conflicting Flow All	1733	2012	863				859	0	0	942	0	0
Stage 1	1047	1047	-				-	-	-	-	-	-
Stage 2	686	965	-				-	-	-	-	-	-
Critical Hdwy	6.4	6.5	6.2				4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	5.4	5.5	-				-	-	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-				-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3				2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	98	60	357				782	-	-	724	-	-
Stage 1	341	308	-				-	-	-	-	-	-
Stage 2	504	336	-				-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	68	0	348				769	-	-	724	-	-
Mov Cap-2 Maneuver	68	0	-				-	-	-	-	-	-
Stage 1	325	0	-				-	-	-	-	-	-
Stage 2	371	0	-				-	-	-	-	-	-
Approach	EB						NB		SB			
HCM Ctrl Dly, s/v	80						0.12		1.11			
HCM LOS	F											
Minor Lane/Major Mvmt		NBL	NBT	NBR	EBLnI	SBL	SBT	SBR				
Capacity (veh/h)		21	-	-	93	186	-	-				
HCM Lane V/C Ratio		0.015	-	-	0.526	0.134	-	-				
HCM Ctrl Dly (s/v)		9.8	0	-	80	10.7	0	-				
HCM Lane LOS		A	A	-	F	B	A	-				
HCM 95th %tile D(veh)		0	-	-	2.3	0.5	-	-				

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	5	5	10	0	25	5	715	10	45	680	15
Future Vol, veh/h	5	5	5	10	0	25	5	715	10	45	680	15
Conflicting Peds, #/hr	20	0	20	20	0	20	20	0	20	20	0	20
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	83	83	83	69	69	69	93	93	93	96	96	96
Heavy Vehicles, %	10	10	10	0	0	0	3	3	3	2	2	2
Mvmt Flow	6	6	6	14	0	36	5	769	11	47	708	16
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1629	1640	756	1630	1643	814	744	0	0	800	0	0
Stage 1	830	830	-	805	805	-	-	-	-	-	-	-
Stage 2	800	810	-	825	838	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.1	6.5	6.2	4.13	-	-	4.12	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.5	4	3.3	2.227	-	-	2.218	-	-
Pot Cap-1 Maneuver	78	96	395	82	101	381	859	-	-	823	-	-
Stage 1	353	374	-	379	398	-	-	-	-	-	-	-
Stage 2	367	382	-	370	385	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	61	83	382	65	87	368	844	-	-	809	-	-
Mov Cap-2 Maneuver	61	83	-	65	87	-	-	-	-	-	-	-
Stage 1	313	332	-	368	387	-	-	-	-	-	-	-
Stage 2	322	371	-	317	341	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	50.95		38.14		0.06		0.59					
HCM LOS	F		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLnI	WBLnI	SBL	SBT	SBR				
Capacity (veh/h)	12	-	-	96	158	109	-	-				
HCM Lane V/C Ratio	0.006	-	-	0.188	0.321	0.058	-	-				
HCM Ctrl Dly (s/v)	9.3	0	-	50.9	38.1	9.7	0	-				
HCM Lane LOS	A	A	-	F	E	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.7	1.3	0.2	-	-				

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	15	25	5	5	10	15	695	10	20	595	30
Future Vol, veh/h	15	15	25	5	5	10	15	695	10	20	595	30
Conflicting Peds, #/hr	10	0	10	10	0	10	12	0	12	12	0	12
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	75	75	75	64	64	64	96	96	96	98	98	98
Heavy Vehicles, %	4	4	4	6	6	6	3	3	3	2	2	2
Mvmt Flow	20	20	33	8	8	16	16	724	10	20	607	31
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1444	1453	644	1440	1463	751	650	0	0	746	0	0
Stage 1	675	675	-	772	772	-	-	-	-	-	-	-
Stage 2	769	778	-	668	691	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.16	6.56	6.26	4.13	-	-	4.12	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.16	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.16	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.554	4.054	3.354	2.227	-	-	2.218	-	-
Pot Cap-1 Maneuver	109	129	469	108	126	404	932	-	-	862	-	-
Stage 1	440	450	-	386	403	-	-	-	-	-	-	-
Stage 2	391	404	-	441	440	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	90	118	460	77	115	396	922	-	-	853	-	-
Mov Cap-2 Maneuver	90	118	-	77	115	-	-	-	-	-	-	-
Stage 1	419	429	-	371	388	-	-	-	-	-	-	-
Stage 2	354	388	-	372	419	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	46.24		35.18		0.19		0.29					
HCM LOS	E		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLnI	WBLnI	SBL	SBT	SBR				
Capacity (veh/h)	37	-	-	158	150	55	-	-				
HCM Lane V/C Ratio	0.017	-	-	0.465	0.208	0.024	-	-				
HCM Ctrl Dly (s/v)	9	0	-	46.2	35.2	9.3	0	-				
HCM Lane LOS	A	A	-	E	E	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	2.2	0.8	0.1	-	-				

Intersection						
Int Delay, s/veh	12.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	585	655	0	0	875
Future Vol, veh/h	0	585	655	0	0	875
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	96	96	96	96	96	96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	609	682	0	0	911
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	341	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.33	-	-	-	-
Pot Cap-1 Maneuver	0	652	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	652	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Ctrl Dly, s/v	46.24	0	0			
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	WBLnI	SBT			
Capacity (veh/h)	-	652	-			
HCM Lane V/C Ratio	-	0.935	-			
HCM Ctrl Dly (s/v)	-	46.2	-			
HCM Lane LOS	-	E	-			
HCM 95th %tile Q(veh)	-	12.7	-			

Part 7: Traffic Signal Warrant Analysis

HCS Warrants Report

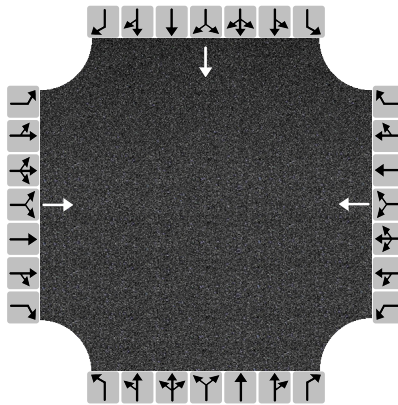
Project Information

Analyst	Seth Asante	Date	5/7/2025
Agency	CTPS	Analysis Year	2025
Jurisdiction	Salem	Time Period Analyzed	
Units	U.S. Customary	MUTCD Method	MUTCD 11 (2023)
Project Description	Route 114 Corridor Study		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	7:00	Coordinated Signal System	No
Major Street Speed (mi/h)	30	Nearest Signal (ft)	650
Adequate Trials of Crash Exp. Alt.	No		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	1	0	0	1	0	0	0	0	0	1	0
Lane Usage		T			T						T	
Vehicle Volumes Averages (veh/h)	0	670	0	0	779	0	0	0	0	0	123	0
Pedestrian median refuge available	No			No			No			No		
Pedestrian Averages (peds/h)	6			6			2			2		
Gap Averages (gaps/h)	0			0			0			0		
Delay Averages (s/veh)	0.0			0.0			0.0			35.3		
Delay Averages (veh-hrs)	0.0			0.0			0.0			1.3		

School Crossing and Roadway Network

Number of Students in Highest Hour	20	Two or More Major Routes	Yes
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	60	5-year Growth Factor (%)	3

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)	-	Tractor-Trailer Trucks (%)	0

Volume Summary														
Hours	Major Volume (veh/h)	Minor Volume (veh/h)	Total Volume (veh/h)	Peds/h	Gaps/h	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (80%)	4A (100%)	4B (100%)
7:00 - 8:00	1240	228	1468	22	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
8:00 - 9:00	1481	100	1581	22	0	No	No	Yes	Yes	Yes	No	No	No	No
9:00 - 10:00	1488	77	1565	22	0	No	No	Yes	Yes	No	No	No	No	No
10:00 - 11:00	1386	74	1460	10	0	No	No	No	Yes	No	No	No	No	No
11:00 - 12:00	1415	75	1490	10	0	No	No	Yes	Yes	No	No	No	No	No
12:00 - 13:00	1427	79	1506	10	0	No	No	Yes	Yes	No	No	No	No	No
13:00 - 14:00	1468	120	1588	10	0	No	Yes	Yes	Yes	Yes	No	Yes	No	No
14:00 - 15:00	1497	128	1625	10	0	No	Yes	Yes	Yes	Yes	No	Yes	No	No
15:00 - 16:00	1502	162	1664	22	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
16:00 - 17:00	1456	177	1633	22	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
17:00 - 18:00	1548	177	1725	22	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
18:00 - 19:00	1489	88	1577	10	0	No	No	Yes	Yes	Yes	No	No	No	No
Total	17397	1485	18882	192	0	4	6	11	12	8	0	6	0	0

Pedestrian Volume								
15th % pedestrian speed < 3.5 ft/s				Pedestrian refuge present?			EB	WB
Hours	Major Street Vehicular Volume (veh/h)			Major Street Pedestrian Volume (ped/h)			4A (100%)	4B (100%)
	EB	WB	Total	EB	WB	Total		
7:00 - 8:00	588	652	1240	8	8	16	No	No
8:00 - 9:00	653	828	1481	8	8	16	No	No
9:00 - 10:00	650	838	1488	8	8	16	No	No
10:00 - 11:00	604	782	1386	4	4	8	No	No
11:00 - 12:00	632	783	1415	4	4	8	No	No
12:00 - 13:00	649	778	1427	4	4	8	No	No
13:00 - 14:00	674	794	1468	4	4	8	No	No
14:00 - 15:00	706	791	1497	4	4	8	No	No
15:00 - 16:00	716	786	1502	8	8	16	No	No
16:00 - 17:00	710	746	1456	8	8	16	No	No
17:00 - 18:00	746	802	1548	8	8	16	No	No
18:00 - 19:00	714	775	1489	4	4	8	No	No
Totals	8042	9355	17397	72	72	144	0	0

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	✓
A. Minimum Vehicular Volumes (Both major approaches --and-- more critical minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- more critical minor approach) --or--	✓
80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- more critical minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- more critical minor approach)	✓
Warrant 3: Peak Hour	✓

A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- more critical minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. Peak-Hour Volumes	
Warrant 5: School Crossing	✓
Gaps Same Period --and--	✓
Student Volumes	✓
Nearest Traffic Control Signal (optional)	✓
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported Crash History --and--	✓
B1. Angle Crashes and Pedestrian Crashes within a 1-year Period (All Severities)	
B2. Angle Crashes and Pedestrian Crashes within a 1-year Period (Fatal-and-Injury)	
B3. Angle Crashes and Pedestrian Crashes within a 3-year Period (All Severities)	✓
B4. Angle Crashes and Pedestrian Crashes within a 3-year Period (Fatal-and-Injury)	
C. 80% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	✓
Warrant 8: Roadway Network	✓
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	✓
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS Warrants Report

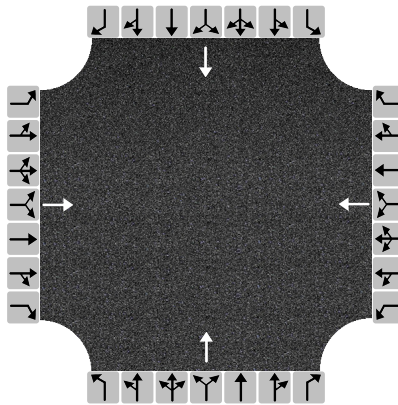
Project Information

Analyst	Seth Asante	Date	5/7/2025
Agency	CTPS	Analysis Year	2025
Jurisdiction	Salem	Time Period Analyzed	
Units	U.S. Customary	MUTCD Method	MUTCD 11 (2023)
Project Description	Route 114 Corridor Study: Franklin St at North St		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	7:00	Coordinated Signal System	No
Major Street Speed (mi/h)	30	Nearest Signal (ft)	650
Adequate Trials of Crash Exp. Alt.	No		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	1	0	0	1	0	0	1	0	0	1	0
Lane Usage		T			T			T			T	
Vehicle Volumes Averages (veh/h)	0	1068	0	0	860	0	0	45	0	0	125	0
Pedestrian median refuge available	No			No			No			No		
Pedestrian Averages (peds/h)	2			10			1			1		
Gap Averages (gaps/h)	0			0			0			0		
Delay Averages (s/veh)	0.0			0.0			49.7			13.3		
Delay Averages (veh-hrs)	0.0			0.0			0.7			0.5		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	Yes
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	60	5-year Growth Factor (%)	3

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)	-	Tractor-Trailer Trucks (%)	0

Volume Summary														
Hours	Major Volume (veh/h)	Minor Volume (veh/h)	Total Volume (veh/h)	Peds/h	Gaps/h	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (80%)	4A (100%)	4B (100%)
7:00 - 8:00	1977	169	2171	20	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
8:00 - 9:00	2030	116	2179	20	0	No	No	Yes	Yes	Yes	No	Yes	No	No
9:00 - 10:00	1796	86	1926	20	0	No	No	Yes	Yes	Yes	No	No	No	No
10:00 - 11:00	1763	85	1892	7	0	No	No	Yes	Yes	Yes	No	No	No	No
11:00 - 12:00	1772	92	1909	7	0	No	No	Yes	Yes	Yes	No	No	No	No
12:00 - 13:00	1832	106	1984	7	0	No	No	Yes	Yes	Yes	No	Yes	No	No
13:00 - 14:00	1898	126	2079	7	0	No	Yes	Yes	Yes	Yes	No	Yes	No	No
14:00 - 15:00	1982	118	2142	7	0	No	No	Yes	Yes	Yes	No	Yes	No	No
15:00 - 16:00	2052	167	2272	22	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
16:00 - 17:00	2118	173	2352	22	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
17:00 - 18:00	2075	174	2303	22	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
18:00 - 19:00	1844	92	1979	8	0	No	No	Yes	Yes	Yes	No	No	No	No
Total	23139	1504	25188	169	0	4	5	12	12	12	0	8	0	0

Pedestrian Volume								
15th % pedestrian speed < 3.5 ft/s				Pedestrian refuge present?			EB	WB
Hours	Major Street Vehicular Volume (veh/h)			Major Street Pedestrian Volume (ped/h)			4A (100%)	4B (100%)
	EB	WB	Total	EB	WB	Total		
7:00 - 8:00	1140	837	1977	3	15	18	No	No
8:00 - 9:00	1082	948	2030	3	15	18	No	No
9:00 - 10:00	953	843	1796	3	15	18	No	No
10:00 - 11:00	961	802	1763	1	5	6	No	No
11:00 - 12:00	992	780	1772	1	5	6	No	No
12:00 - 13:00	1038	794	1832	1	5	6	No	No
13:00 - 14:00	1067	831	1898	1	5	6	No	No
14:00 - 15:00	1094	888	1982	1	5	6	No	No
15:00 - 16:00	1161	891	2052	3	15	18	No	No
16:00 - 17:00	1205	913	2118	3	15	18	No	No
17:00 - 18:00	1174	901	2075	3	15	18	No	No
18:00 - 19:00	952	892	1844	1	5	6	No	No
Totals	12819	10320	23139	24	120	144	0	0

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	✓
A. Minimum Vehicular Volumes (Both major approaches --and-- more critical minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- more critical minor approach) --or--	✓
80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- more critical minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- more critical minor approach)	✓
Warrant 3: Peak Hour	✓

A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- more critical minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. Peak-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	✓
Student Volumes	
Nearest Traffic Control Signal (optional)	✓
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported Crash History --and--	
B1. Angle Crashes and Pedestrian Crashes within a 1-year Period (All Severities)	
B2. Angle Crashes and Pedestrian Crashes within a 1-year Period (Fatal-and-Injury)	
B3. Angle Crashes and Pedestrian Crashes within a 3-year Period (All Severities)	
B4. Angle Crashes and Pedestrian Crashes within a 3-year Period (Fatal-and-Injury)	
C. 80% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	✓
Warrant 8: Roadway Network	✓
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	✓
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS Warrants Report

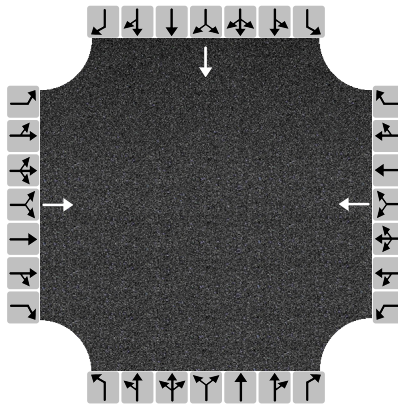
Project Information

Analyst	Seth Asante	Date	5/7/2025
Agency	CTPS	Analysis Year	2025
Jurisdiction	Salem	Time Period Analyzed	
Units	U.S. Customary	MUTCD Method	MUTCD 11 (2023)
Project Description	Route 114 Corridor Study: Lynde St at North St		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	7:00	Coordinated Signal System	No
Major Street Speed (mi/h)	25	Nearest Signal (ft)	300
Adequate Trials of Crash Exp. Alt.	No		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	1	0	0	1	0	0	0	0	0	1	0
Lane Usage		T			T						T	
Vehicle Volumes Averages (veh/h)	0	737	0	0	515	0	0	0	0	0	91	0
Pedestrian median refuge available	No			No			No			No		
Pedestrian Averages (peds/h)	7			7			0			1		
Gap Averages (gaps/h)	0			0			0			0		
Delay Averages (s/veh)	0.0			0.0			0.0			15.0		
Delay Averages (veh-hrs)	0.0			0.0			0.7			0.4		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	Yes
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	60	5-year Growth Factor (%)	3

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)	-	Tractor-Trailer Trucks (%)	0

Volume Summary														
Hours	Major Volume (veh/h)	Minor Volume (veh/h)	Total Volume (veh/h)	Peds/h	Gaps/h	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (80%)	4A (100%)	4B (100%)
7:00 - 8:00	1213	80	1293	21	0	No	No	Yes	Yes	No	No	No	No	No
8:00 - 9:00	1278	96	1374	21	0	No	No	Yes	Yes	Yes	No	No	No	No
9:00 - 10:00	1167	80	1247	21	0	No	No	Yes	Yes	No	No	No	No	No
10:00 - 11:00	1135	84	1219	11	0	No	No	Yes	Yes	Yes	No	No	No	No
11:00 - 12:00	1149	92	1241	11	0	No	No	Yes	Yes	Yes	No	No	No	No
12:00 - 13:00	1174	77	1251	11	0	No	No	Yes	Yes	No	No	No	No	No
13:00 - 14:00	1234	87	1321	11	0	No	No	Yes	Yes	Yes	No	No	No	No
14:00 - 15:00	1300	82	1382	11	0	No	No	Yes	Yes	Yes	No	No	No	No
15:00 - 16:00	1422	92	1514	21	0	No	No	Yes	Yes	Yes	No	No	No	No
16:00 - 17:00	1404	110	1514	21	0	No	No	Yes	Yes	Yes	No	No	No	No
17:00 - 18:00	1357	120	1477	21	0	No	Yes	Yes	Yes	Yes	No	Yes	No	No
18:00 - 19:00	1203	99	1302	11	0	No	No	Yes	Yes	Yes	No	No	No	No
Total	15036	1099	16135	192	0	0	1	12	12	9	0	1	0	0

Pedestrian Volume								
15th % pedestrian speed < 3.5 ft/s				Pedestrian refuge present?			EB	WB
Hours	Major Street Vehicular Volume (veh/h)			Major Street Pedestrian Volume (ped/h)			4A (100%)	4B (100%)
	EB	WB	Total	EB	WB	Total		
7:00 - 8:00	653	560	1213	10	9	19	No	No
8:00 - 9:00	749	529	1278	10	9	19	No	No
9:00 - 10:00	696	471	1167	10	9	19	No	No
10:00 - 11:00	672	463	1135	5	5	10	No	No
11:00 - 12:00	674	475	1149	5	5	10	No	No
12:00 - 13:00	673	501	1174	5	5	10	No	No
13:00 - 14:00	696	538	1234	5	5	10	No	No
14:00 - 15:00	747	553	1300	5	5	10	No	No
15:00 - 16:00	842	580	1422	10	9	19	No	No
16:00 - 17:00	851	553	1404	10	9	19	No	No
17:00 - 18:00	816	541	1357	10	9	19	No	No
18:00 - 19:00	782	421	1203	5	5	10	No	No
Totals	8851	6185	15036	90	84	174	0	0

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	✓
A. Minimum Vehicular Volumes (Both major approaches --and-- more critical minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- more critical minor approach) --or--	✓
80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- more critical minor approach)	
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- more critical minor approach)	✓
Warrant 3: Peak Hour	✓

A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- more critical minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. Peak-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	✓
Student Volumes	
Nearest Traffic Control Signal (optional)	✓
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported Crash History --and--	✓
B1. Angle Crashes and Pedestrian Crashes within a 1-year Period (All Severities)	
B2. Angle Crashes and Pedestrian Crashes within a 1-year Period (Fatal-and-Injury)	
B3. Angle Crashes and Pedestrian Crashes within a 3-year Period (All Severities)	✓
B4. Angle Crashes and Pedestrian Crashes within a 3-year Period (Fatal-and-Injury)	
C. 80% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	✓
Warrant 8: Roadway Network	✓
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	✓
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS Warrants Report

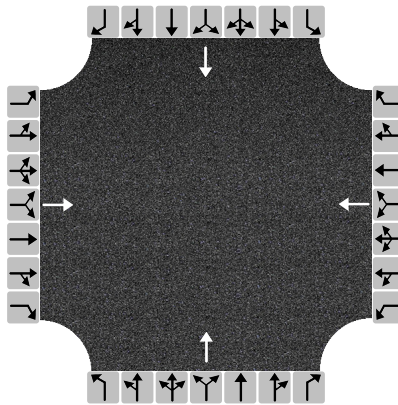
Project Information

Analyst	Seth Asante	Date	5/7/2025
Agency	CTPS	Analysis Year	2025
Jurisdiction	Salem	Time Period Analyzed	
Units	U.S. Customary	MUTCD Method	MUTCD 11 (2023)
Project Description	Route 114 Corridor Study: Summer St at Norman St		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	7:00	Coordinated Signal System	No
Major Street Speed (mi/h)	25	Nearest Signal (ft)	500
Adequate Trials of Crash Exp. Alt.	No		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	1	0	0	1	0	0	1	0	0	1	0
Lane Usage		T			T			T			T	
Vehicle Volumes Averages (veh/h)	0	573	0	0	215	0	0	357	0	0	99	0
Pedestrian median refuge available	No			No			No			No		
Pedestrian Averages (peds/h)	15			6			7			7		
Gap Averages (gaps/h)	0			0			0			0		
Delay Averages (s/veh)	8.5			8.0			8.0			8.0		
Delay Averages (veh-hrs)	1.4			0.5			0.8			0.2		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	Yes
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	60	5-year Growth Factor (%)	3

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)	-	Tractor-Trailer Trucks (%)	0

Volume Summary														
Hours	Major Volume (veh/h)	Minor Volume (veh/h)	Total Volume (veh/h)	Peds/h	Gaps/h	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (80%)	4A (100%)	4B (100%)
7:00 - 8:00	776	353	1224	48	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
8:00 - 9:00	787	356	1259	48	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
9:00 - 10:00	779	341	1206	48	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
10:00 - 11:00	733	326	1145	24	0	Yes	Yes	No	Yes	Yes	No	Yes	No	No
11:00 - 12:00	746	360	1196	24	0	Yes	Yes	No	Yes	Yes	No	Yes	No	No
12:00 - 13:00	704	346	1154	24	0	Yes	Yes	No	Yes	Yes	No	Yes	No	No
13:00 - 14:00	781	380	1253	24	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
14:00 - 15:00	789	360	1246	24	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
15:00 - 16:00	891	368	1380	48	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
16:00 - 17:00	904	386	1403	48	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
17:00 - 18:00	833	391	1330	48	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
18:00 - 19:00	749	317	1159	24	0	Yes	Yes	No	Yes	Yes	No	Yes	No	No
Total	9472	4284	14955	432	0	12	12	8	12	12	0	12	0	0

Pedestrian Volume								
15th % pedestrian speed < 3.5 ft/s				Pedestrian refuge present?			EB	WB
Hours	Major Street Vehicular Volume (veh/h)			Major Street Pedestrian Volume (ped/h)			4A (100%)	4B (100%)
	EB	WB	Total	EB	WB	Total		
7:00 - 8:00	516	260	776	20	8	28	No	No
8:00 - 9:00	533	254	787	20	8	28	No	No
9:00 - 10:00	565	214	779	20	8	28	No	No
10:00 - 11:00	537	196	733	10	4	14	No	No
11:00 - 12:00	552	194	746	10	4	14	No	No
12:00 - 13:00	508	196	704	10	4	14	No	No
13:00 - 14:00	572	209	781	10	4	14	No	No
14:00 - 15:00	576	213	789	10	4	14	No	No
15:00 - 16:00	642	249	891	20	8	28	No	No
16:00 - 17:00	657	247	904	20	8	28	No	No
17:00 - 18:00	626	207	833	20	8	28	No	No
18:00 - 19:00	601	148	749	10	4	14	No	No
Totals	6885	2587	9472	180	72	252	0	0

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	✓
A. Minimum Vehicular Volumes (Both major approaches --and-- more critical minor approach) --or--	✓
B. Interruption of Continuous Traffic (Both major approaches --and-- more critical minor approach) --or--	✓
80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- more critical minor approach)	✓
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- more critical minor approach)	✓
Warrant 3: Peak Hour	✓

A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- more critical minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. Peak-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	✓
Student Volumes	
Nearest Traffic Control Signal (optional)	✓
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported Crash History --and--	
B1. Angle Crashes and Pedestrian Crashes within a 1-year Period (All Severities)	
B2. Angle Crashes and Pedestrian Crashes within a 1-year Period (Fatal-and-Injury)	
B3. Angle Crashes and Pedestrian Crashes within a 3-year Period (All Severities)	
B4. Angle Crashes and Pedestrian Crashes within a 3-year Period (Fatal-and-Injury)	
C. 80% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	✓
Warrant 8: Roadway Network	✓
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	✓
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS Warrants Report

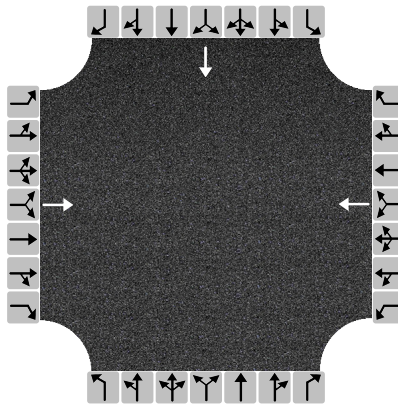
Project Information

Analyst	Seth Asante	Date	5/7/2025
Agency	CTPS	Analysis Year	2025
Jurisdiction	Salem	Time Period Analyzed	
Units	U.S. Customary	MUTCD Method	MUTCD 11 (2023)
Project Description	Route 114 Corridor Study - Palmer St		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	7:00	Coordinated Signal System	No
Major Street Speed (mi/h)	30	Nearest Signal (ft)	600
Adequate Trials of Crash Exp. Alt.	No		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	1	0	0	1	0	0	0	0	0	1	0
Lane Usage		T			T						T	
Vehicle Volumes Averages (veh/h)	0	650	0	0	644	0	0	0	0	0	166	0
Pedestrian median refuge available	No			No			No			No		
Pedestrian Averages (peds/h)	22			15			2			6		
Gap Averages (gaps/h)	0			0			0			0		
Delay Averages (s/veh)	0.0			0.0			0.0			88.8		
Delay Averages (veh-hrs)	0.0			0.0			0.0			4.2		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	Yes
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	60	5-year Growth Factor (%)	3

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)	-	Tractor-Trailer Trucks (%)	0

Volume Summary														
Hours	Major Volume (veh/h)	Minor Volume (veh/h)	Total Volume (veh/h)	Peds/h	Gaps/h	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (80%)	4A (100%)	4B (100%)
7:00 - 8:00	1316	90	1406	61	0	No	No	Yes	Yes	Yes	No	No	No	No
8:00 - 9:00	1354	134	1488	61	0	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
9:00 - 10:00	1186	160	1346	61	0	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
10:00 - 11:00	1184	112	1296	30	0	No	No	Yes	Yes	Yes	No	No	No	No
11:00 - 12:00	1160	64	1224	30	0	No	No	No	Yes	No	No	No	No	No
12:00 - 13:00	1218	120	1338	30	0	No	Yes	Yes	Yes	Yes	No	No	No	No
13:00 - 14:00	1199	198	1397	30	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
14:00 - 15:00	1251	191	1442	30	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
15:00 - 16:00	1477	245	1722	61	0	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
16:00 - 17:00	1457	276	1733	61	0	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
17:00 - 18:00	1517	250	1767	61	0	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
18:00 - 19:00	1216	161	1377	30	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
Total	15535	2001	17536	546	0	7	9	11	12	11	5	8	0	0

Pedestrian Volume								
15th % pedestrian speed < 3.5 ft/s				Pedestrian refuge present?			EB	WB
Hours	Major Street Vehicular Volume (veh/h)			Major Street Pedestrian Volume (ped/h)			4A (100%)	4B (100%)
	EB	WB	Total	EB	WB	Total		
7:00 - 8:00	587	729	1316	30	20	50	No	No
8:00 - 9:00	658	696	1354	30	20	50	No	No
9:00 - 10:00	583	603	1186	30	20	50	No	No
10:00 - 11:00	563	621	1184	15	10	25	No	No
11:00 - 12:00	570	590	1160	15	10	25	No	No
12:00 - 13:00	588	630	1218	15	10	25	No	No
13:00 - 14:00	576	623	1199	15	10	25	No	No
14:00 - 15:00	658	593	1251	15	10	25	No	No
15:00 - 16:00	770	707	1477	30	20	50	No	No
16:00 - 17:00	770	687	1457	30	20	50	No	No
17:00 - 18:00	831	686	1517	30	20	50	No	No
18:00 - 19:00	648	568	1216	15	10	25	No	No
Totals	7802	7733	15535	270	180	450	0	0

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	✓
A. Minimum Vehicular Volumes (Both major approaches --and-- more critical minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- more critical minor approach) --or--	✓
80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- more critical minor approach)	✓
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- more critical minor approach)	✓
Warrant 3: Peak Hour	✓

A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	✓
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- more critical minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. Peak-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	✓
Student Volumes	
Nearest Traffic Control Signal (optional)	✓
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported Crash History --and--	✓
B1. Angle Crashes and Pedestrian Crashes within a 1-year Period (All Severities)	
B2. Angle Crashes and Pedestrian Crashes within a 1-year Period (Fatal-and-Injury)	
B3. Angle Crashes and Pedestrian Crashes within a 3-year Period (All Severities)	✓
B4. Angle Crashes and Pedestrian Crashes within a 3-year Period (Fatal-and-Injury)	
C. 80% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	✓
Warrant 8: Roadway Network	✓
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	✓
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS Warrants Report

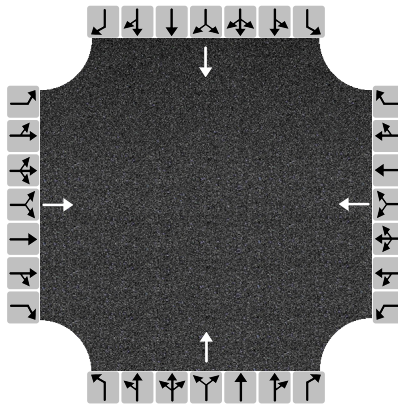
Project Information

Analyst	Seth Asante	Date	5/7/2025
Agency	CTPS	Analysis Year	2025
Jurisdiction	Salem	Time Period Analyzed	
Units	U.S. Customary	MUTCD Method	MUTCD 11 (2023)
Project Description	Route 114 Corridor Study - Leavitt St		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	7:00	Coordinated Signal System	No
Major Street Speed (mi/h)	30	Nearest Signal (ft)	850
Adequate Trials of Crash Exp. Alt.	No		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	1	0	0	1	0	0	1	0	0	1	0
Lane Usage		T			T			T			T	
Vehicle Volumes Averages (veh/h)	0	650	0	0	617	0	0	10	0	0	0	0
Pedestrian median refuge available	No			No			No			No		
Pedestrian Averages (peds/h)	15			22			3			1		
Gap Averages (gaps/h)	0			0			0			0		
Delay Averages (s/veh)	0.0			0.0			46.6			0.0		
Delay Averages (veh-hrs)	0.0			0.0			0.2			4.2		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	60	5-year Growth Factor (%)	3

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)	-	Tractor-Trailer Trucks (%)	0

Volume Summary														
Hours	Major Volume (veh/h)	Minor Volume (veh/h)	Total Volume (veh/h)	Peds/h	Gaps/h	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (80%)	4A (100%)	4B (100%)
7:00 - 8:00	1113	1	1114	58	0	No	No	No	No	No	No	No	No	No
8:00 - 9:00	1253	14	1267	58	0	No	No	No	No	No	No	No	No	No
9:00 - 10:00	1158	19	1177	58	0	No	No	No	No	No	No	No	No	No
10:00 - 11:00	1130	9	1139	28	0	No	No	No	No	No	No	No	No	No
11:00 - 12:00	1102	2	1104	28	0	No	No	No	No	No	No	No	No	No
12:00 - 13:00	1174	4	1178	28	0	No	No	No	No	No	No	No	No	No
13:00 - 14:00	1176	7	1183	28	0	No	No	No	No	No	No	No	No	No
14:00 - 15:00	1274	7	1281	28	0	No	No	No	No	No	No	No	No	No
15:00 - 16:00	1434	9	1443	58	0	No	No	No	No	No	No	No	No	No
16:00 - 17:00	1513	21	1534	58	0	No	No	No	No	No	No	No	No	No
17:00 - 18:00	1604	13	1617	58	0	No	No	No	No	No	No	No	No	No
18:00 - 19:00	1277	15	1292	27	0	No	No	No	No	No	No	No	No	No
Total	15208	121	15329	515	0	0	0	0	0	0	0	0	0	0

Pedestrian Volume								
15th % pedestrian speed < 3.5 ft/s				Pedestrian refuge present?			EB	WB
Hours	Major Street Vehicular Volume (veh/h)			Major Street Pedestrian Volume (ped/h)			4A (100%)	4B (100%)
	EB	WB	Total	EB	WB	Total		
7:00 - 8:00	587	526	1113	20	30	50	No	No
8:00 - 9:00	658	595	1253	20	30	50	No	No
9:00 - 10:00	583	575	1158	20	30	50	No	No
10:00 - 11:00	563	567	1130	10	15	25	No	No
11:00 - 12:00	570	532	1102	10	15	25	No	No
12:00 - 13:00	588	586	1174	10	15	25	No	No
13:00 - 14:00	576	600	1176	10	15	25	No	No
14:00 - 15:00	658	616	1274	10	15	25	No	No
15:00 - 16:00	770	664	1434	20	30	50	No	No
16:00 - 17:00	770	743	1513	20	30	50	No	No
17:00 - 18:00	831	773	1604	20	30	50	No	No
18:00 - 19:00	648	629	1277	10	15	25	No	No
Totals	7802	7406	15208	180	270	450	0	0

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- more critical minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- more critical minor approach) --or--	
80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- more critical minor approach)	
Warrant 2: Four-Hour Vehicular Volume	
Four-Hour Vehicular Volume (Both major approaches --and-- more critical minor approach)	
Warrant 3: Peak Hour	
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	

B. Peak-Hour Vehicular Volumes (Both major approaches --and-- more critical minor approach)	
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. Peak-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	✓
Student Volumes	
Nearest Traffic Control Signal (optional)	✓
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported Crash History --and--	
B1. Angle Crashes and Pedestrian Crashes within a 1-year Period (All Severities)	
B2. Angle Crashes and Pedestrian Crashes within a 1-year Period (Fatal-and-Injury)	
B3. Angle Crashes and Pedestrian Crashes within a 3-year Period (All Severities)	
B4. Angle Crashes and Pedestrian Crashes within a 3-year Period (Fatal-and-Injury)	
C. 80% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS Warrants Report

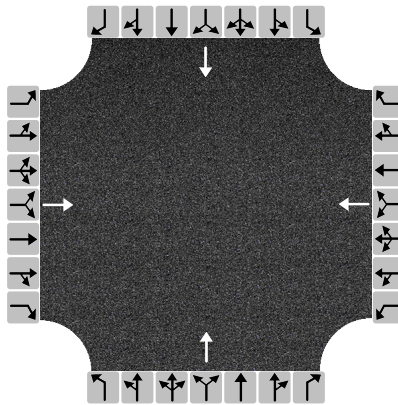
Project Information

Analyst	Seth Asante	Date	5/7/2025
Agency	CTPS	Analysis Year	2025
Jurisdiction	Salem	Time Period Analyzed	
Units	U.S. Customary	MUTCD Method	MUTCD 11 (2023)
Project Description	Route 114 Corridor Study - Holly-Leach		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	7:00	Coordinated Signal System	No
Major Street Speed (mi/h)	30	Nearest Signal (ft)	2000
Adequate Trials of Crash Exp. Alt.	No		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	1	0	0	1	0	0	1	0	0	1	0
Lane Usage		T			T			T			T	
Vehicle Volumes Averages (veh/h)	0	673	0	0	704	0	0	7	0	0	28	0
Pedestrian median refuge available	No			No			No			No		
Pedestrian Averages (peds/h)	11			11			3			9		
Gap Averages (gaps/h)	0			0			0			0		
Delay Averages (s/veh)	0.0			0.0			7.5			7.5		
Delay Averages (veh-hrs)	0.0			0.0			0.0			0.1		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	60	5-year Growth Factor (%)	3

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)	-	Tractor-Trailer Trucks (%)	0

Volume Summary														
Hours	Major Volume (veh/h)	Minor Volume (veh/h)	Total Volume (veh/h)	Peds/h	Gaps/h	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (80%)	4A (100%)	4B (100%)
7:00 - 8:00	1518	31	1561	49	0	No	No	No	No	No	No	No	No	No
8:00 - 9:00	1505	26	1543	49	0	No	No	No	No	No	No	No	No	No
9:00 - 10:00	1335	30	1370	49	0	No	No	No	No	No	No	No	No	No
10:00 - 11:00	1305	26	1337	21	0	No	No	No	No	No	No	No	No	No
11:00 - 12:00	1322	29	1355	21	0	No	No	No	No	No	No	No	No	No
12:00 - 13:00	1331	22	1359	21	0	No	No	No	No	No	No	No	No	No
13:00 - 14:00	1341	22	1372	21	0	No	No	No	No	No	No	No	No	No
14:00 - 15:00	1324	34	1366	21	0	No	No	No	No	No	No	No	No	No
15:00 - 16:00	1479	26	1512	49	0	No	No	No	No	No	No	No	No	No
16:00 - 17:00	1447	27	1482	49	0	No	No	No	No	No	No	No	No	No
17:00 - 18:00	1491	35	1536	49	0	No	No	No	No	No	No	No	No	No
18:00 - 19:00	1130	30	1165	20	0	No	No	No	No	No	No	No	No	No
Total	16528	338	16958	419	0	0	0	0	0	0	0	0	0	0

Pedestrian Volume								
15th % pedestrian speed < 3.5 ft/s				Pedestrian refuge present?			EB	WB
Hours	Major Street Vehicular Volume (veh/h)			Major Street Pedestrian Volume (ped/h)			4A (100%)	4B (100%)
	EB	WB	Total	EB	WB	Total		
7:00 - 8:00	754	764	1518	15	15	30	No	No
8:00 - 9:00	753	752	1505	15	15	30	No	No
9:00 - 10:00	681	654	1335	15	15	30	No	No
10:00 - 11:00	649	656	1305	7	7	14	No	No
11:00 - 12:00	567	755	1322	7	7	14	No	No
12:00 - 13:00	625	706	1331	7	7	14	No	No
13:00 - 14:00	657	684	1341	7	7	14	No	No
14:00 - 15:00	648	676	1324	7	7	14	No	No
15:00 - 16:00	732	747	1479	15	15	30	No	No
16:00 - 17:00	714	733	1447	15	15	30	No	No
17:00 - 18:00	730	761	1491	15	15	30	No	No
18:00 - 19:00	566	564	1130	7	7	14	No	No
Totals	8076	8452	16528	132	132	264	0	0

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- more critical minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- more critical minor approach) --or--	
80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- more critical minor approach)	
Warrant 2: Four-Hour Vehicular Volume	
Four-Hour Vehicular Volume (Both major approaches --and-- more critical minor approach)	
Warrant 3: Peak Hour	
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	

B. Peak-Hour Vehicular Volumes (Both major approaches --and-- more critical minor approach)	
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. Peak-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	✓
Student Volumes	
Nearest Traffic Control Signal (optional)	✓
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported Crash History --and--	
B1. Angle Crashes and Pedestrian Crashes within a 1-year Period (All Severities)	
B2. Angle Crashes and Pedestrian Crashes within a 1-year Period (Fatal-and-Injury)	
B3. Angle Crashes and Pedestrian Crashes within a 3-year Period (All Severities)	
B4. Angle Crashes and Pedestrian Crashes within a 3-year Period (Fatal-and-Injury)	
C. 80% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

HCS Warrants Report

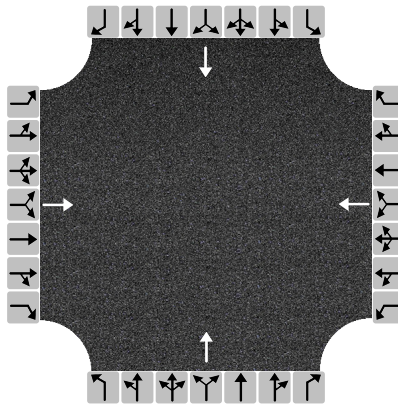
Project Information

Analyst	Seth Asante	Date	5/7/2025
Agency	CTPS	Analysis Year	2025
Jurisdiction	Salem	Time Period Analyzed	
Units	U.S. Customary	MUTCD Method	MUTCD 11 (2023)
Project Description	Route 114 Corridor Study -Ocean		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	7:00	Coordinated Signal System	No
Major Street Speed (mi/h)	30	Nearest Signal (ft)	800
Adequate Trials of Crash Exp. Alt.	No		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	1	0	0	1	0	0	1	0	0	1	0
Lane Usage		T			T			T			T	
Vehicle Volumes Averages (veh/h)	0	673	0	0	704	0	0	50	0	0	57	0
Pedestrian median refuge available	No			No			No			No		
Pedestrian Averages (peds/h)	11			11			7			4		
Gap Averages (gaps/h)	0			0			1			0		
Delay Averages (s/veh)	0.0			0.0			29.5			21.0		
Delay Averages (veh-hrs)	0.0			0.0			0.4			0.3		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	60	5-year Growth Factor (%)	3

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)	-	Tractor-Trailer Trucks (%)	0

Volume Summary														
Hours	Major Volume (veh/h)	Minor Volume (veh/h)	Total Volume (veh/h)	Peds/h	Gaps/h	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (80%)	4A (100%)	4B (100%)
7:00 - 8:00	1518	51	1616	45	0	No	No	No	No	No	No	No	No	No
8:00 - 9:00	1505	62	1621	45	0	No	No	No	Yes	No	No	No	No	No
9:00 - 10:00	1335	60	1441	45	13	No	No	No	Yes	No	No	No	No	No
10:00 - 11:00	1305	58	1413	22	0	No	No	No	No	No	No	No	No	No
11:00 - 12:00	1322	62	1438	22	0	No	No	No	Yes	No	No	No	No	No
12:00 - 13:00	1331	65	1443	22	0	No	No	No	Yes	No	No	No	No	No
13:00 - 14:00	1341	55	1446	22	0	No	No	No	No	No	No	No	No	No
14:00 - 15:00	1324	57	1431	22	0	No	No	No	No	No	No	No	No	No
15:00 - 16:00	1479	57	1589	45	0	No	No	No	No	No	No	No	No	No
16:00 - 17:00	1447	67	1576	45	0	No	No	No	Yes	No	No	No	No	No
17:00 - 18:00	1491	68	1605	45	0	No	No	No	Yes	No	No	No	No	No
18:00 - 19:00	1130	42	1209	22	0	No	No	No	No	No	No	No	No	No
Total	16528	704	17828	402	13	0	0	0	6	0	0	0	0	0

Pedestrian Volume								
15th % pedestrian speed < 3.5 ft/s				Pedestrian refuge present?			EB	WB
Hours	Major Street Vehicular Volume (veh/h)			Major Street Pedestrian Volume (ped/h)			4A (100%)	4B (100%)
	EB	WB	Total	EB	WB	Total		
7:00 - 8:00	754	764	1518	15	15	30	No	No
8:00 - 9:00	753	752	1505	15	15	30	No	No
9:00 - 10:00	681	654	1335	15	15	30	No	No
10:00 - 11:00	649	656	1305	7	7	14	No	No
11:00 - 12:00	567	755	1322	7	7	14	No	No
12:00 - 13:00	625	706	1331	7	7	14	No	No
13:00 - 14:00	657	684	1341	7	7	14	No	No
14:00 - 15:00	648	676	1324	7	7	14	No	No
15:00 - 16:00	732	747	1479	15	15	30	No	No
16:00 - 17:00	714	733	1447	15	15	30	No	No
17:00 - 18:00	730	761	1491	15	15	30	No	No
18:00 - 19:00	566	564	1130	7	7	14	No	No
Totals	8076	8452	16528	132	132	264	0	0

Warrants	
Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- more critical minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- more critical minor approach) --or--	
80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- more critical minor approach)	
Warrant 2: Four-Hour Vehicular Volume	
Four-Hour Vehicular Volume (Both major approaches --and-- more critical minor approach)	
Warrant 3: Peak Hour	
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	

B. Peak-Hour Vehicular Volumes (Both major approaches --and-- more critical minor approach)	
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. Peak-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	✓
Student Volumes	
Nearest Traffic Control Signal (optional)	✓
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported Crash History --and--	
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