Transportation Impact Assessment
Technical Appendix
Volume III

Proposed Mixed-Use Development
Union Point
Abington, Rockland and Weymouth, Massachusetts

Prepared for:

BPD Union Point LLC
Weymouth, Massachusetts

February 2023

Prepared by:

Vanasse & Associates inc
Transportation Engineers & Planners

35 New England Business Center Drive
Suite 140
Andover, MA 01810

APPENDIX VOLUME III

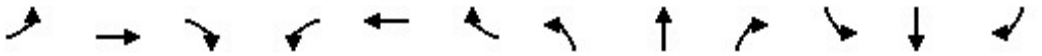
CAPACITY ANALYSIS WORKSHEETS

CAPACITY ANALYSIS WORKSHEETS

Route 18 at Washington Street (Route 53)
Route 53 at Middle Street
Winter Street at Middle Street
Route 18 at Winter Street
Route 18 at the Route 3 Northbound Ramps
Route 18 at the Route 3 Southbound Ramps
Route 18 at Middle Street and West Street
Grove Street at Plain Street
Grove Street at Liberty Street
Grove Street at Columbian Street
Columbian Street at Forest Street
Columbian Street at Park Avenue West
Route 18 at Park Avenue and Park Avenue West
Route 18 at Columbian Street
Columbian Street at Pleasant Street and Union Street
Park Avenue at Pleasant Street
Pleasant Street at Elm Street
Pleasant Street at Pine Street
Oak Street at Pine Street
Ralph Talbot Street at Pine Street
Derby Street at Pond Park Road
Derby Street at the Route 3 Southbound Ramps
Derby Street at the Route 3 Northbound Ramps
Derby Street at Old Derby Street
Derby Street at the Derby Street Shops Main Driveway (signalized)
Derby Street at Cushing Street
Route 53 at Cushing Street
Route 53 at Gardner Street and Derby Street
Route 53 at Farm Hills Lane
Main Street (Route 228) at Gardner Street (north)
Route 228 at Route 53
Route 53 at Grove Street and High Street
Route 228 at the Route 3 Northbound Ramps
Route 228 at Gardner Street (south)
Route 228 at Pond Street
Route 228 at the Route 3 Southbound Ramps
Hingham Street at Commerce Road

Hingham Street at Reservoir Park Drive
Weymouth Street at Reservoir Park Drive
Weymouth Street at Sharp Street and Abington Street
Randolph Street at Forest Street
Derby Street at Pond Street
Route 18 at Pond Street and Pleasant Street
Route 18 at Derby Street
Route 18 at Shea Memorial Drive
Shea Memorial Drive at Memorial Grove Avenue
Union Street at White Street
Pond Street at Thicket Street
Route 18 at Trotter Road
Route 18 at Pond Street (Route 58)
Trotter Road at Patriot Parkway
Memorial Grove Avenue at Snow Bird Avenue
Bill Delahunt Parkway and Patriot Parkway at Shea Memorial Drive
Route 139 at Old Randolph Street and Hancock Street
Route 139 at Old Randolph Street and Chestnut Street
Randolph Street (Route 139) at Lincoln Street
Route 18 at Randolph Street and North Avenue (Route 139)
North Avenue at Adams Street (Route 58)
North Avenue at Salem Street and Plain Street (Route 139)
Salem Street at Spruce Street
VFW Drive at Union Street
VFW Drive at Pleasant Street
Union Street at North Avenue
Webster Street at East Water Street (Route 123)
Hingham Street at Webster Street (Route 123)
Union Street at East Water Street
Plymouth Street (Route 58) at Central Street
Route 58 at Centre Avenue (Route 123)
Route 58 at Summer Street
Route 18 at Brockton Avenue (Route 123)
Route 18 at Temple Street (Route 27)
Route 18 at Auburn Street (Route 14)

Route 18 at Washington Street (Route 53)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	213	279	41	234	6	271	15	36	8	6	8
Future Volume (vph)	11	213	279	41	234	6	271	15	36	8	6	8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.996			0.966			0.951	
Flt Protected		0.998		0.950			0.950	0.967			0.982	
Satd. Flow (prot)	0	2089	1760	1743	1839	0	1720	1641	0	0	1920	0
Flt Permitted		0.978		0.950			0.950	0.967			0.982	
Satd. Flow (perm)	0	2047	1760	1743	1839	0	1720	1641	0	0	1920	0
Satd. Flow (RTOR)					2			11			12	
Adj. Flow (vph)	12	239	313	52	296	8	315	17	42	12	9	12
Lane Group Flow (vph)	0	251	313	52	304	0	189	185	0	0	33	0
Turn Type	Perm	NA	pt+ov	Prot	NA		Split	NA		Split	NA	
Protected Phases		10	1 10	9	13		1	1		3	3	
Permitted Phases	10											
Detector Phase	10	10	1 10	9	13		1	1		3	3	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		10.0	22.5		10.0	10.0		10.0	10.0	
Total Split (s)	43.0	43.0		18.0	61.0		25.0	25.0		18.0	18.0	
Total Split (%)	35.5%	35.5%		14.9%	50.4%		20.7%	20.7%		14.9%	14.9%	
Maximum Green (s)	38.0	38.0		14.0	56.0		20.0	20.0		13.0	13.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		0.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0		0.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.39	0.24	0.18	0.39		0.37	0.38			0.10	
Control Delay		22.9	6.5	33.4	14.9		25.6	24.6			27.3	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay		22.9	6.5	33.4	14.9		25.6	24.6			27.3	
Queue Length 50th (ft)		57	28	14	43		45	41			5	
Queue Length 95th (ft)		210	112	60	175		182	170			30	
Internal Link Dist (ft)		132			598			288			663	
Turn Bay Length (ft)				190			160					
Base Capacity (vph)		1504	1391	567	1586		839	806			632	
Starvation Cap Reductn		0	0	0	0		0	0			0	
Spillback Cap Reductn		0	0	0	0		0	0			0	
Storage Cap Reductn		0	0	0	0		0	0			0	
Reduced v/c Ratio		0.17	0.23	0.09	0.19		0.23	0.23			0.05	

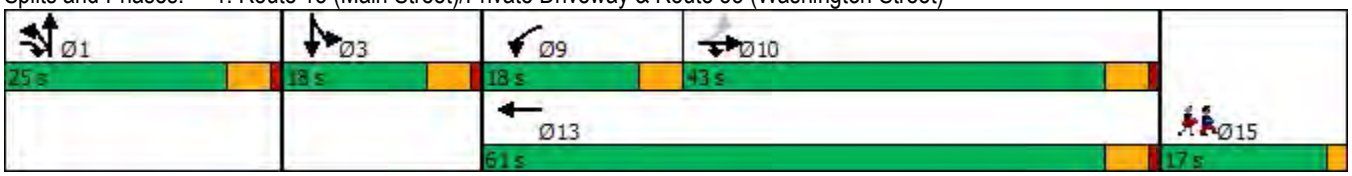
Intersection Summary
Cycle Length: 121

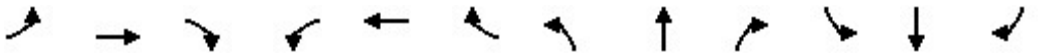
Lane Group	Ø15
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	15
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	14%
Maximum Green (s)	15.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	14
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 56.5
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Route 18 (Main Street)/Private Driveway & Route 53 (Washington Street)

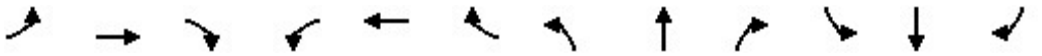




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	213	279	41	234	6	271	15	36	8	6	8
Future Volume (vph)	11	213	279	41	234	6	271	15	36	8	6	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	13	12	12	13	12	12	16	16	16
Total Lost time (s)		4.0	5.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		0.95	0.95			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.97			0.95	
Flt Protected		1.00	1.00	0.95	1.00		0.95	0.97			0.98	
Satd. Flow (prot)		2089	1760	1743	1839		1720	1641			1920	
Flt Permitted		0.98	1.00	0.95	1.00		0.95	0.97			0.98	
Satd. Flow (perm)		2047	1760	1743	1839		1720	1641			1920	
Peak-hour factor, PHF	0.89	0.89	0.89	0.79	0.79	0.79	0.86	0.86	0.86	0.69	0.69	0.69
Adj. Flow (vph)	12	239	313	52	296	8	315	17	42	12	9	12
RTOR Reduction (vph)	0	0	0	0	1	0	0	8	0	0	11	0
Lane Group Flow (vph)	0	251	313	52	303	0	189	177	0	0	22	0
Heavy Vehicles (%)	0%	3%	4%	7%	3%	0%	3%	0%	3%	0%	0%	13%
Turn Type	Perm	NA	pt+ov	Prot	NA		Split	NA		Split	NA	
Protected Phases		10	1 10	9	13		1	1		3	3	
Permitted Phases	10											
Actuated Green, G (s)		16.5	31.9	4.3	24.8		15.4	15.4			2.0	
Effective Green, g (s)		17.5	31.9	4.3	25.8		16.4	16.4			3.0	
Actuated g/C Ratio		0.29	0.52	0.07	0.42		0.27	0.27			0.05	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		588	921	123	779		463	441			94	
v/s Ratio Prot			0.18	0.03	c0.16		c0.11	0.11			c0.01	
v/s Ratio Perm		0.12										
v/c Ratio		0.43	0.34	0.42	0.39		0.41	0.40			0.23	
Uniform Delay, d1		17.6	8.4	27.1	12.1		18.3	18.2			27.8	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		0.5	0.2	2.3	0.3		0.6	0.6			1.3	
Delay (s)		18.1	8.6	29.4	12.4		18.9	18.8			29.1	
Level of Service		B	A	C	B		B	B			C	
Approach Delay (s)		12.9			14.9			18.8			29.1	
Approach LOS		B			B			B			C	

Intersection Summary					
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.44				
Actuated Cycle Length (s)	60.9	Sum of lost time (s)		21.0	
Intersection Capacity Utilization	50.2%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	383	425	50	349	5	370	25	74	16	13	7
Future Volume (vph)	25	383	425	50	349	5	370	25	74	16	13	7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.998			0.952			0.974	
Flt Protected		0.997		0.950			0.950	0.972			0.978	
Satd. Flow (prot)	0	2127	1812	1865	1878	0	1754	1655	0	0	2051	0
Flt Permitted		0.963		0.950			0.950	0.972			0.978	
Satd. Flow (perm)	0	2054	1812	1865	1878	0	1754	1655	0	0	2051	0
Satd. Flow (RTOR)					1			17			8	
Adj. Flow (vph)	28	435	483	53	367	5	435	29	87	21	17	9
Lane Group Flow (vph)	0	463	483	53	372	0	278	273	0	0	47	0
Turn Type	Perm	NA	pt+ov	Prot	NA		Split	NA		Split	NA	
Protected Phases		10	1 10	9	13		1	1		3	3	
Permitted Phases	10											
Detector Phase	10	10	1 10	9	13		1	1		3	3	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		10.0	22.5		10.0	10.0		10.0	10.0	
Total Split (s)	43.0	43.0		18.0	61.0		25.0	25.0		18.0	18.0	
Total Split (%)	35.5%	35.5%		14.9%	50.4%		20.7%	20.7%		14.9%	14.9%	
Maximum Green (s)	38.0	38.0		14.0	56.0		20.0	20.0		13.0	13.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		0.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0		0.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.60	0.35	0.25	0.43		0.53	0.54			0.18	
Control Delay		26.8	7.5	42.6	16.3		35.0	33.6			36.6	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay		26.8	7.5	42.6	16.3		35.0	33.6			36.6	
Queue Length 50th (ft)		195	106	25	113		128	118			18	
Queue Length 95th (ft)		400	189	78	257		#340	#323			53	
Internal Link Dist (ft)		132			598			288			663	
Turn Bay Length (ft)				190			160					
Base Capacity (vph)		1240	1370	409	1447		577	556			456	
Starvation Cap Reductn		0	0	0	0		0	0			0	
Spillback Cap Reductn		0	0	0	0		0	0			0	
Storage Cap Reductn		0	0	0	0		0	0			0	
Reduced v/c Ratio		0.37	0.35	0.13	0.26		0.48	0.49			0.10	

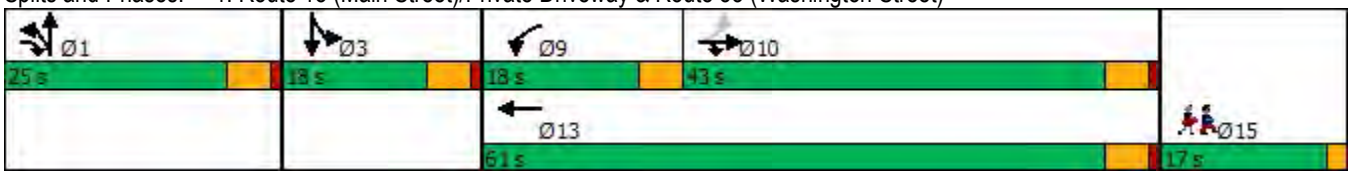
Intersection Summary
Cycle Length: 121

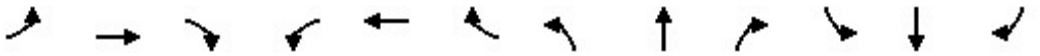
Lane Group	Ø15
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	15
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	14%
Maximum Green (s)	15.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	11
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 74.7
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Route 18 (Main Street)/Private Driveway & Route 53 (Washington Street)

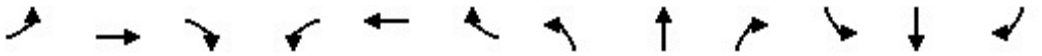




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	383	425	50	349	5	370	25	74	16	13	7
Future Volume (vph)	25	383	425	50	349	5	370	25	74	16	13	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	13	12	12	13	12	12	16	16	16
Total Lost time (s)		4.0	5.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		0.95	0.95			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.95			0.97	
Flt Protected		1.00	1.00	0.95	1.00		0.95	0.97			0.98	
Satd. Flow (prot)		2127	1812	1865	1878		1754	1656			2052	
Flt Permitted		0.96	1.00	0.95	1.00		0.95	0.97			0.98	
Satd. Flow (perm)		2055	1812	1865	1878		1754	1656			2052	
Peak-hour factor, PHF	0.88	0.88	0.88	0.95	0.95	0.95	0.85	0.85	0.85	0.75	0.75	0.75
Adj. Flow (vph)	28	435	483	53	367	5	435	29	87	21	17	9
RTOR Reduction (vph)	0	0	0	0	1	0	0	12	0	0	7	0
Lane Group Flow (vph)	0	463	483	53	371	0	278	261	0	0	40	0
Heavy Vehicles (%)	0%	1%	1%	0%	1%	0%	1%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	pt+ov	Prot	NA		Split	NA		Split	NA	
Protected Phases		10	1 10	9	13		1	1		3	3	
Permitted Phases	10											
Actuated Green, G (s)		26.7	47.8	4.5	35.2		21.1	21.1			4.0	
Effective Green, g (s)		27.7	47.8	4.5	36.2		22.1	22.1			5.0	
Actuated g/C Ratio		0.35	0.60	0.06	0.46		0.28	0.28			0.06	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		718	1093	105	858		489	462			129	
v/s Ratio Prot			0.27	0.03	c0.20		c0.16	0.16			c0.02	
v/s Ratio Perm		c0.23										
v/c Ratio		0.64	0.44	0.50	0.43		0.57	0.56			0.31	
Uniform Delay, d1		21.6	8.5	36.3	14.6		24.5	24.4			35.4	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		2.0	0.3	3.8	0.4		1.5	1.6			1.3	
Delay (s)		23.6	8.8	40.0	14.9		26.0	26.0			36.8	
Level of Service		C	A	D	B		C	C			D	
Approach Delay (s)		16.0			18.0			26.0			36.8	
Approach LOS		B			B			C			D	

Intersection Summary					
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.59				
Actuated Cycle Length (s)	79.2	Sum of lost time (s)		21.0	
Intersection Capacity Utilization	68.0%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	403	432	69	371	9	363	18	71	23	24	10
Future Volume (vph)	40	403	432	69	371	9	363	18	71	23	24	10
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.997			0.952			0.977	
Flt Protected		0.996		0.950			0.950	0.971			0.980	
Satd. Flow (prot)	0	2125	1812	1811	1876	0	1772	1663	0	0	2062	0
Flt Permitted		0.936		0.950			0.950	0.971			0.980	
Satd. Flow (perm)	0	1997	1812	1811	1876	0	1772	1663	0	0	2062	0
Satd. Flow (RTOR)					1			17			7	
Adj. Flow (vph)	42	424	455	71	382	9	413	20	81	26	27	11
Lane Group Flow (vph)	0	466	455	71	391	0	260	254	0	0	64	0
Turn Type	Perm	NA	pt+ov	Prot	NA		Split	NA		Split	NA	
Protected Phases		10	1 10	9	13		1	1		3	3	
Permitted Phases	10											
Detector Phase	10	10	1 10	9	13		1	1		3	3	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		10.0	22.5		10.0	10.0		10.0	10.0	
Total Split (s)	43.0	43.0		18.0	61.0		25.0	25.0		18.0	18.0	
Total Split (%)	35.5%	35.5%		14.9%	50.4%		20.7%	20.7%		14.9%	14.9%	
Maximum Green (s)	38.0	38.0		14.0	56.0		20.0	20.0		13.0	13.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		0.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0		0.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		4.0		4.0	4.0		4.0	4.0			4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.68	0.39	0.33	0.45		0.59	0.60			0.25	
Control Delay		34.0	9.9	48.6	19.0		43.5	41.6			43.0	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay		34.0	9.9	48.6	19.0		43.5	41.6			43.0	
Queue Length 50th (ft)		206	105	35	123		126	114			28	
Queue Length 95th (ft)		440	201	99	278		#338	#322			84	
Internal Link Dist (ft)		132			598			288			663	
Turn Bay Length (ft)				190			160					
Base Capacity (vph)		1056	1179	366	1277		537	516			422	
Starvation Cap Reductn		0	0	0	0		0	0			0	
Spillback Cap Reductn		0	0	0	0		0	0			0	
Storage Cap Reductn		0	0	0	0		0	0			0	
Reduced v/c Ratio		0.44	0.39	0.19	0.31		0.48	0.49			0.15	

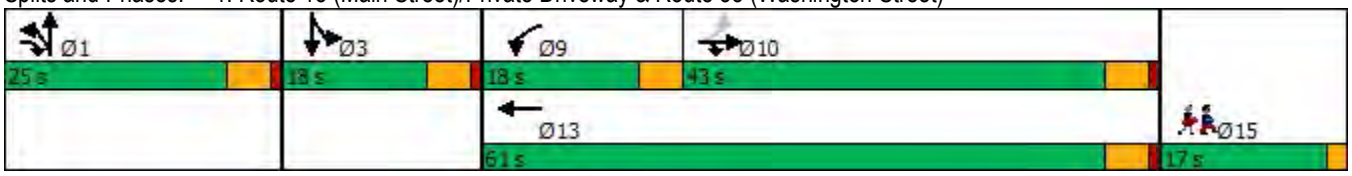
Intersection Summary
Cycle Length: 121

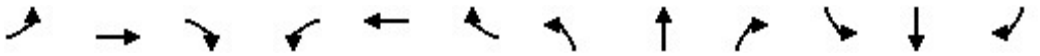
Lane Group	Ø15
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	15
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	14%
Maximum Green (s)	15.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	20
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 85.5
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Route 18 (Main Street)/Private Driveway & Route 53 (Washington Street)



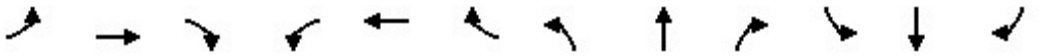


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	403	432	69	371	9	363	18	71	23	24	10
Future Volume (vph)	40	403	432	69	371	9	363	18	71	23	24	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	13	12	12	13	12	12	16	16	16
Total Lost time (s)		4.0	5.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		0.95	0.95			1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.95			0.98	
Flt Protected		1.00	1.00	0.95	1.00		0.95	0.97			0.98	
Satd. Flow (prot)		2124	1812	1811	1875		1772	1663			2061	
Flt Permitted		0.94	1.00	0.95	1.00		0.95	0.97			0.98	
Satd. Flow (perm)		1997	1812	1811	1875		1772	1663			2061	
Peak-hour factor, PHF	0.95	0.95	0.95	0.97	0.97	0.97	0.88	0.88	0.88	0.89	0.89	0.89
Adj. Flow (vph)	42	424	455	71	382	9	412	20	81	26	27	11
RTOR Reduction (vph)	0	0	0	0	1	0	0	13	0	0	6	0
Lane Group Flow (vph)	0	466	455	71	390	0	260	241	0	0	58	0
Heavy Vehicles (%)	0%	1%	1%	3%	1%	0%	0%	0%	1%	0%	0%	0%
Turn Type	Perm	NA	pt+ov	Prot	NA		Split	NA		Split	NA	
Protected Phases		10	1 10	9	13		1	1		3	3	
Permitted Phases	10											
Actuated Green, G (s)		28.2	48.2	7.2	39.4		20.0	20.0			6.3	
Effective Green, g (s)		29.2	48.2	7.2	40.4		21.0	21.0			7.3	
Actuated g/C Ratio		0.34	0.55	0.08	0.46		0.24	0.24			0.08	
Clearance Time (s)		5.0		4.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		669	1002	149	869		427	400			172	
v/s Ratio Prot			0.25	0.04	c0.21		c0.15	0.14			c0.03	
v/s Ratio Perm		c0.23										
v/c Ratio		0.70	0.45	0.48	0.45		0.61	0.60			0.33	
Uniform Delay, d1		25.1	11.6	38.2	15.8		29.4	29.3			37.6	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2		3.2	0.3	2.4	0.4		2.5	2.6			1.2	
Delay (s)		28.3	11.9	40.5	16.2		31.9	31.9			38.8	
Level of Service		C	B	D	B		C	C			D	
Approach Delay (s)		20.2			19.9			31.9			38.8	
Approach LOS		C			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	87.1	Sum of lost time (s)	21.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Route 53 at Middle Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	178	82	239	181	85	86	382	221	79	448	64
Future Volume (vph)	71	178	82	239	181	85	86	382	221	79	448	64
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.953			0.952				0.850		0.981	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3190	0	1652	3194	0	1560	3421	1487	1636	3381	0
Flt Permitted	0.584			0.315			0.267			0.950		
Satd. Flow (perm)	1025	3190	0	548	3194	0	438	3421	1487	1636	3381	0
Satd. Flow (RTOR)		38			53				254		9	
Adj. Flow (vph)	97	244	112	244	185	87	99	439	254	87	492	70
Lane Group Flow (vph)	97	356	0	244	272	0	99	439	254	87	562	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	1	6		5	2		7	4	5	3	8	
Permitted Phases	6			2			4		4			
Detector Phase	1	6		5	2		7	4	5	3	8	
Switch Phase												
Minimum Initial (s)	5.0	1.0		5.0	1.0		1.0	1.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	7.5		22.5	7.5		8.0	7.0	22.5	10.0	10.0	
Total Split (s)	12.0	10.0		46.0	44.0		14.0	29.0	46.0	12.0	27.0	
Total Split (%)	8.2%	6.8%		31.5%	30.1%		9.6%	19.9%	31.5%	8.2%	18.5%	
Maximum Green (s)	8.0	3.5		42.0	37.5		8.5	23.5	42.0	7.0	22.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	3.5	4.0	
All-Red Time (s)	0.0	2.5		0.0	2.5		1.5	1.5	0.0	1.5	1.0	
Lost Time Adjust (s)	0.0	-2.5		0.0	-2.5		-1.5	-1.5	0.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min		Min	C-Min		None	None	Min	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.28	0.45		0.65	0.26		0.67	0.76	0.40	0.98	1.04	
Control Delay	32.2	45.2		38.9	30.5		67.5	54.9	7.1	156.4	107.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	15.0	0.4	0.0	22.1	
Total Delay	32.2	45.2		38.9	30.5		67.5	69.9	7.5	156.4	129.2	
Queue Length 50th (ft)	53	127		148	76		44	102	72	84	~299	
Queue Length 95th (ft)	85	167		257	127		m69	m145	m122	#202	#423	
Internal Link Dist (ft)		605			535			153			719	
Turn Bay Length (ft)	200			510			100		135	230		
Base Capacity (vph)	352	787		540	1043		151	585	817	89	540	
Starvation Cap Reductn	0	0		0	0		0	134	239	0	0	
Spillback Cap Reductn	0	2		0	0		0	0	0	0	38	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.28	0.45		0.45	0.26		0.66	0.97	0.44	0.98	1.12	

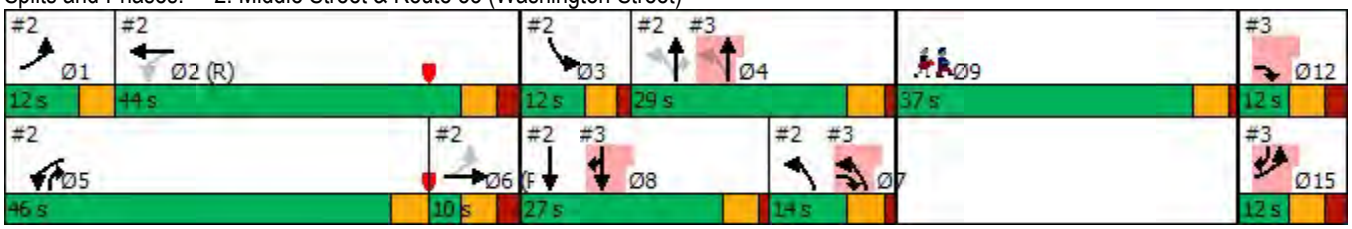
Intersection Summary
Cycle Length: 146

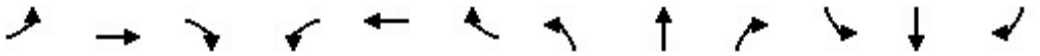
Lane Group	Ø9	Ø12	Ø15
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Adj. Flow (vph)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	9	12	15
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	5.0	5.0	1.0
Minimum Split (s)	37.0	11.5	8.0
Total Split (s)	37.0	12.0	12.0
Total Split (%)	25%	8%	8%
Maximum Green (s)	32.0	5.5	5.5
Yellow Time (s)	4.0	4.0	4.0
All-Red Time (s)	1.0	2.5	2.5
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag			
Lead-Lag Optimize?			
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	None	None	None
Walk Time (s)	7.0		
Flash Dont Walk (s)	25.0		
Pedestrian Calls (#/hr)	2		
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary

Actuated Cycle Length: 146
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
~ 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: Middle Street & Route 53 (Washington Street)

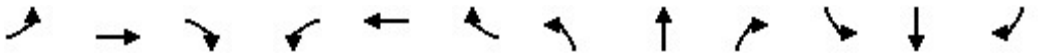




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	178	82	239	181	85	86	382	221	79	448	64
Future Volume (vph)	71	178	82	239	181	85	86	382	221	79	448	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	11	11	10	11	11	10	11	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.95		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1668	3189		1652	3194		1560	3421	1487	1636	3382	
Flt Permitted	0.58	1.00		0.31	1.00		0.27	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1026	3189		547	3194		438	3421	1487	1636	3382	
Peak-hour factor, PHF	0.73	0.73	0.73	0.98	0.98	0.98	0.87	0.87	0.87	0.91	0.91	0.91
Adj. Flow (vph)	97	244	112	244	185	87	99	439	254	87	492	70
RTOR Reduction (vph)	0	30	0	0	38	0	0	0	178	0	8	0
Lane Group Flow (vph)	97	326	0	244	234	0	99	439	76	87	554	0
Heavy Vehicles (%)	1%	3%	7%	2%	4%	4%	8%	2%	5%	3%	1%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	1	6		5	2		7	4	5	3	8	
Permitted Phases	6			2			4		4			
Actuated Green, G (s)	37.6	28.2		52.9	39.5		23.2	23.2	43.9	7.0	22.0	
Effective Green, g (s)	37.6	30.7		52.9	42.0		24.7	24.7	43.9	8.0	23.0	
Actuated g/C Ratio	0.26	0.21		0.36	0.29		0.17	0.17	0.30	0.05	0.16	
Clearance Time (s)	4.0	6.5		4.0	6.5		5.5	5.5	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	305	670		354	918		148	578	447	89	532	
v/s Ratio Prot	0.02	0.10		c0.10	0.07		0.04	c0.13	0.02	0.05	c0.16	
v/s Ratio Perm	0.06			c0.15			0.07		0.03			
v/c Ratio	0.32	0.49		0.69	0.26		0.67	0.76	0.17	0.98	1.04	
Uniform Delay, d1	42.7	50.7		35.7	40.0		61.6	57.8	37.6	68.9	61.5	
Progression Factor	1.00	1.00		1.00	1.00		0.84	0.84	3.09	1.00	1.00	
Incremental Delay, d2	0.6	2.5		5.5	0.7		7.6	4.0	0.1	87.1	50.4	
Delay (s)	43.3	53.2		41.2	40.6		59.5	52.3	116.4	156.0	111.9	
Level of Service	D	D		D	D		E	D	F	F	F	
Approach Delay (s)		51.1			40.9			73.8			117.8	
Approach LOS		D			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	74.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	146.0	Sum of lost time (s)	27.5
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	334	126	239	274	80	127	558	278	116	478	108
Future Volume (vph)	127	334	126	239	274	80	127	558	278	116	478	108
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.959			0.966				0.850		0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1652	3347	0	1668	3371	0	1636	3490	1531	1685	3325	0
Flt Permitted	0.526			0.171			0.267			0.950		
Satd. Flow (perm)	914	3347	0	300	3371	0	460	3490	1531	1685	3325	0
Satd. Flow (RTOR)		28			25				276		16	
Adj. Flow (vph)	138	363	137	257	295	86	135	594	296	129	531	120
Lane Group Flow (vph)	138	500	0	257	381	0	135	594	296	129	651	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	1	6		5	2		7	4	5	3	8	
Permitted Phases	6			2			4		4			
Detector Phase	1	6		5	2		7	4	5	3	8	
Switch Phase												
Minimum Initial (s)	5.0	1.0		5.0	1.0		1.0	1.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	7.5		22.5	7.5		8.0	7.0	22.5	10.0	10.0	
Total Split (s)	12.0	10.0		46.0	44.0		14.0	29.0	46.0	12.0	27.0	
Total Split (%)	8.2%	6.8%		31.5%	30.1%		9.6%	19.9%	31.5%	8.2%	18.5%	
Maximum Green (s)	8.0	3.5		42.0	37.5		8.5	23.5	42.0	7.0	22.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	3.5	4.0	
All-Red Time (s)	0.0	2.5		0.0	2.5		1.5	1.5	0.0	1.5	1.0	
Lost Time Adjust (s)	0.0	-2.5		0.0	-2.5		-1.5	-1.5	0.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min		Min	C-Min		None	None	Min	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.56	0.84		0.80	0.40		0.85	0.99	0.43	1.40	1.21	
Control Delay	48.6	68.3		55.4	41.8		80.2	83.5	13.5	280.7	161.0	
Queue Delay	0.0	31.9		0.2	0.0		0.0	36.9	0.7	0.0	2.0	
Total Delay	48.6	100.2		55.6	41.8		80.2	120.5	14.2	280.7	163.0	
Queue Length 50th (ft)	92	231		186	146		106	314	163	~163	~391	
Queue Length 95th (ft)	#171	#427		278	196		m102	m255	m200	#304	#520	
Internal Link Dist (ft)		605			535			153			719	
Turn Bay Length (ft)	200			510			100		135	230		
Base Capacity (vph)	246	595		500	941		159	597	851	92	537	
Starvation Cap Reductn	0	0		0	0		0	160	288	0	0	
Spillback Cap Reductn	0	118		24	0		0	0	0	0	111	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.56	1.05		0.54	0.40		0.85	1.36	0.53	1.40	1.53	

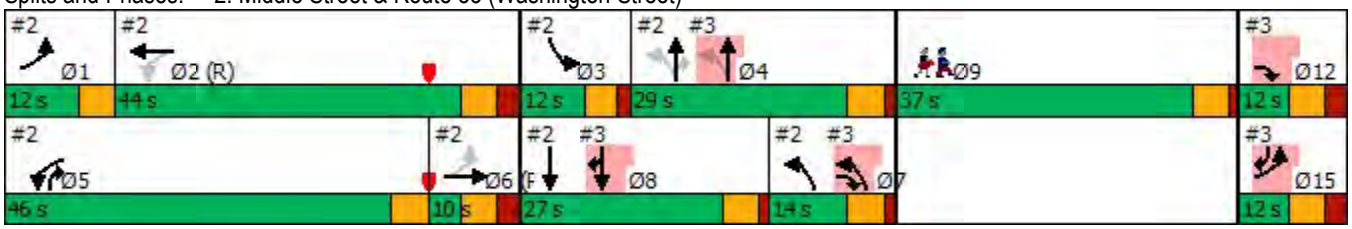
Intersection Summary
Cycle Length: 146

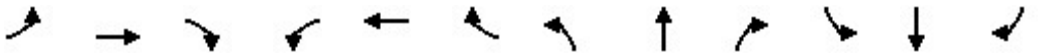
Lane Group	Ø9	Ø12	Ø15
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Adj. Flow (vph)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	9	12	15
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	5.0	5.0	1.0
Minimum Split (s)	37.0	11.5	8.0
Total Split (s)	37.0	12.0	12.0
Total Split (%)	25%	8%	8%
Maximum Green (s)	32.0	5.5	5.5
Yellow Time (s)	4.0	4.0	4.0
All-Red Time (s)	1.0	2.5	2.5
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag			
Lead-Lag Optimize?			
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	None	None	None
Walk Time (s)	7.0		
Flash Dont Walk (s)	25.0		
Pedestrian Calls (#/hr)	12		
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary

Actuated Cycle Length: 146
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ 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: Middle Street & Route 53 (Washington Street)

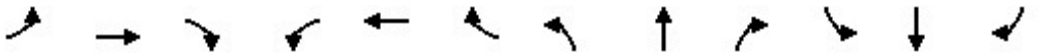




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	334	126	239	274	80	127	558	278	116	478	108
Future Volume (vph)	127	334	126	239	274	80	127	558	278	116	478	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	11	11	10	11	11	10	11	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.96		1.00	0.97		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1652	3346		1668	3372		1636	3490	1531	1685	3327	
Flt Permitted	0.53	1.00		0.17	1.00		0.27	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	914	3346		300	3372		459	3490	1531	1685	3327	
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.94	0.94	0.94	0.90	0.90	0.90
Adj. Flow (vph)	138	363	137	257	295	86	135	594	296	129	531	120
RTOR Reduction (vph)	0	24	0	0	19	0	0	0	188	0	13	0
Lane Group Flow (vph)	138	476	0	257	362	0	135	594	108	129	638	0
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%	3%	0%	2%	0%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	1	6		5	2		7	4	5	3	8	
Permitted Phases	6			2			4		4			
Actuated Green, G (s)	27.4	19.4		46.5	34.5		23.5	23.5	46.6	7.0	22.0	
Effective Green, g (s)	27.4	21.9		46.5	37.0		25.0	25.0	46.6	8.0	23.0	
Actuated g/C Ratio	0.19	0.15		0.32	0.25		0.17	0.17	0.32	0.05	0.16	
Clearance Time (s)	4.0	6.5		4.0	6.5		5.5	5.5	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	211	501		311	854		159	597	488	92	524	
v/s Ratio Prot	0.04	c0.14		c0.13	0.11		0.06	c0.17	0.04	0.08	c0.19	
v/s Ratio Perm	0.09			0.13			0.09		0.04			
v/c Ratio	0.65	0.95		0.83	0.42		0.85	0.99	0.22	1.40	1.22	
Uniform Delay, d1	52.8	61.5		41.6	45.6		63.7	60.4	36.4	69.0	61.5	
Progression Factor	1.00	1.00		1.00	1.00		1.21	1.25	5.73	1.00	1.00	
Incremental Delay, d2	7.1	29.6		16.2	1.5		4.0	9.9	0.0	233.8	114.0	
Delay (s)	59.9	91.1		57.8	47.1		81.4	85.5	208.7	302.8	175.5	
Level of Service	E	F		E	D		F	F	F	F	F	
Approach Delay (s)		84.4			51.4			120.5			196.5	
Approach LOS		F			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	118.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	146.0	Sum of lost time (s)	27.5
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	380	142	250	311	88	152	419	300	109	461	123
Future Volume (vph)	128	380	142	250	311	88	152	419	300	109	461	123
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.959			0.967				0.850		0.968	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3305	0	1652	3348	0	1668	3490	1531	1668	3378	0
Flt Permitted	0.483			0.152			0.267			0.950		
Satd. Flow (perm)	857	3305	0	264	3348	0	469	3490	1531	1668	3378	0
Satd. Flow (RTOR)		27			25				313		20	
Adj. Flow (vph)	135	400	149	294	366	104	158	436	313	112	475	127
Lane Group Flow (vph)	135	549	0	294	470	0	158	436	313	112	602	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	1	6		5	2		7	4	5	3	8	
Permitted Phases	6			2			4		4			
Detector Phase	1	6		5	2		7	4	5	3	8	
Switch Phase												
Minimum Initial (s)	5.0	1.0		5.0	1.0		1.0	1.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	7.5		22.5	7.5		8.0	7.0	22.5	10.0	10.0	
Total Split (s)	12.0	10.0		46.0	44.0		14.0	29.0	46.0	12.0	27.0	
Total Split (%)	8.2%	6.8%		31.5%	30.1%		9.6%	19.9%	31.5%	8.2%	18.5%	
Maximum Green (s)	8.0	3.5		42.0	37.5		8.5	23.5	42.0	7.0	22.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	3.5	4.0	
All-Red Time (s)	0.0	2.5		0.0	2.5		1.5	1.5	0.0	1.5	1.0	
Lost Time Adjust (s)	0.0	-2.5		0.0	-2.5		-1.5	-1.5	0.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min		Min	C-Min		None	None	Min	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.45	0.82		0.86	0.48		0.98	0.73	0.43	1.23	1.10	
Control Delay	38.3	61.9		60.2	42.1		102.5	54.1	7.3	222.6	121.2	
Queue Delay	0.0	1.4		0.0	0.0		0.0	21.2	0.9	0.0	3.1	
Total Delay	38.3	63.3		60.2	42.1		102.5	75.3	8.2	222.6	124.3	
Queue Length 50th (ft)	79	238		201	179		80	116	92	~131	~332	
Queue Length 95th (ft)	#185	#539		305	228		m#153	m129	m133	#261	#458	
Internal Link Dist (ft)		605			535			153			719	
Turn Bay Length (ft)	200			510			100		135	230		
Base Capacity (vph)	301	673		503	988		162	597	871	91	549	
Starvation Cap Reductn	0	0		0	0		0	161	310	0	0	
Spillback Cap Reductn	0	35		3	0		0	0	0	0	105	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.45	0.86		0.59	0.48		0.98	1.00	0.56	1.23	1.36	

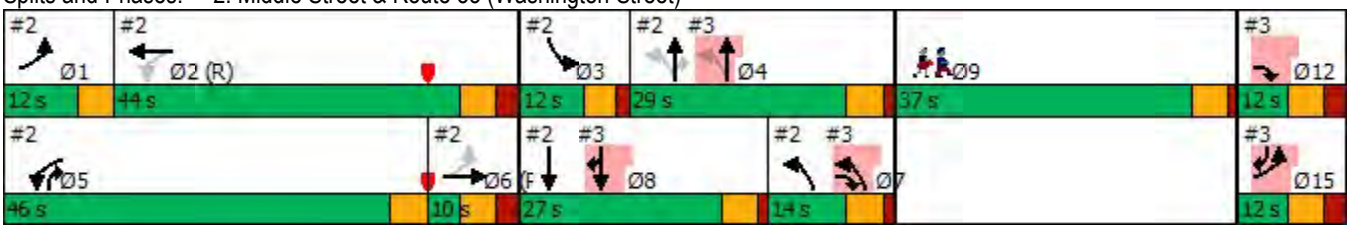
Intersection Summary
Cycle Length: 146

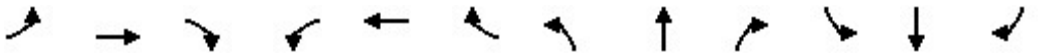
Lane Group	Ø9	Ø12	Ø15
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Adj. Flow (vph)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	9	12	15
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	5.0	5.0	1.0
Minimum Split (s)	37.0	11.5	8.0
Total Split (s)	37.0	12.0	12.0
Total Split (%)	25%	8%	8%
Maximum Green (s)	32.0	5.5	5.5
Yellow Time (s)	4.0	4.0	4.0
All-Red Time (s)	1.0	2.5	2.5
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag			
Lead-Lag Optimize?			
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	None	None	None
Walk Time (s)	7.0		
Flash Dont Walk (s)	25.0		
Pedestrian Calls (#/hr)	1		
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary

Actuated Cycle Length: 146
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ 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: Middle Street & Route 53 (Washington Street)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	380	142	250	311	88	152	419	300	109	461	123
Future Volume (vph)	128	380	142	250	311	88	152	419	300	109	461	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	10	11	11	10	11	11	10	11	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.96		1.00	0.97		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1685	3306		1652	3348		1668	3490	1531	1668	3379	
Flt Permitted	0.48	1.00		0.15	1.00		0.27	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	856	3306		264	3348		468	3490	1531	1668	3379	
Peak-hour factor, PHF	0.95	0.95	0.95	0.85	0.85	0.85	0.96	0.96	0.96	0.97	0.97	0.97
Adj. Flow (vph)	135	400	149	294	366	104	158	436	312	112	475	127
RTOR Reduction (vph)	0	22	0	0	18	0	0	0	209	0	17	0
Lane Group Flow (vph)	135	527	0	294	452	0	158	436	104	112	585	0
Heavy Vehicles (%)	0%	1%	2%	2%	1%	0%	1%	0%	2%	1%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	1	6		5	2		7	4	5	3	8	
Permitted Phases	6			2			4		4			
Actuated Green, G (s)	33.8	22.3		51.3	35.8		23.5	23.5	48.5	7.0	22.0	
Effective Green, g (s)	33.8	24.8		51.3	38.3		25.0	25.0	48.5	8.0	23.0	
Actuated g/C Ratio	0.23	0.17		0.35	0.26		0.17	0.17	0.33	0.05	0.16	
Clearance Time (s)	4.0	6.5		4.0	6.5		5.5	5.5	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	263	561		330	878		162	597	508	91	532	
v/s Ratio Prot	0.04	c0.16		c0.15	0.13		c0.07	0.12	0.04	0.07	c0.17	
v/s Ratio Perm	0.08			0.16			0.10		0.03			
v/c Ratio	0.51	0.94		0.89	0.51		0.98	0.73	0.20	1.23	1.10	
Uniform Delay, d1	46.9	59.8		41.5	45.9		64.2	57.3	34.9	69.0	61.5	
Progression Factor	1.00	1.00		1.00	1.00		0.87	0.86	4.14	1.00	1.00	
Incremental Delay, d2	1.7	25.5		24.5	2.1		45.7	2.6	0.1	168.8	69.2	
Delay (s)	48.6	85.4		66.0	48.1		101.4	52.0	144.7	237.8	130.7	
Level of Service	D	F		E	D		F	D	F	F	F	
Approach Delay (s)		78.1			55.0			92.6			147.5	
Approach LOS		E			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	92.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	146.0	Sum of lost time (s)	27.5
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Winter Street at Middle Street



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø1	Ø2	Ø3	Ø5	Ø6	Ø9
Lane Configurations												
Traffic Volume (vph)	319	84	69	370	341	428						
Future Volume (vph)	319	84	69	370	341	428						
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00						
Frt		0.850				0.850						
Flt Protected	0.950		0.950									
Satd. Flow (prot)	3255	1546	1685	3471	3388	1531						
Flt Permitted	0.950		0.525									
Satd. Flow (perm)	3255	1546	931	3471	3388	1531						
Satd. Flow (RTOR)		92				481						
Adj. Flow (vph)	351	92	90	481	383	481						
Lane Group Flow (vph)	351	92	90	481	383	481						
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pt+ov						
Protected Phases	15	7 12	7	4	8	8 15	1	2	3	5	6	9
Permitted Phases			4									
Detector Phase	15	7 12	7	4	8	8 15						
Switch Phase												
Minimum Initial (s)	1.0		1.0	1.0	5.0		5.0	1.0	5.0	5.0	1.0	5.0
Minimum Split (s)	8.0		8.0	7.0	10.0		10.0	7.5	10.0	22.5	7.5	37.0
Total Split (s)	12.0		14.0	29.0	27.0		12.0	44.0	12.0	46.0	10.0	37.0
Total Split (%)	8.2%		9.6%	19.9%	18.5%		8%	30%	8%	32%	7%	25%
Maximum Green (s)	5.5		8.5	23.5	22.0		8.0	37.5	7.0	42.0	3.5	32.0
Yellow Time (s)	4.0		4.0	4.0	4.0		4.0	4.0	3.5	4.0	4.0	4.0
All-Red Time (s)	2.5		1.5	1.5	1.0		0.0	2.5	1.5	0.0	2.5	1.0
Lost Time Adjust (s)	-2.5		0.0	0.0	0.0							
Total Lost Time (s)	4.0		5.5	5.5	5.0							
Lead/Lag			Lag	Lag	Lead		Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?			Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	None	None		None	C-Min	None	Min	C-Min	None
Walk Time (s)												7.0
Flash Dont Walk (s)												25.0
Pedestrian Calls (#/hr)												2
v/c Ratio	0.52	0.17	0.47	0.87	0.75	0.57						
Control Delay	54.4	6.9	66.4	77.1	41.7	10.1						
Queue Delay	0.0	0.0	0.0	8.8	22.7	1.9						
Total Delay	54.4	6.9	66.4	86.0	64.5	12.0						
Queue Length 50th (ft)	152	0	77	237	120	78						
Queue Length 95th (ft)	#371	35	113	253	m131	m99						
Internal Link Dist (ft)	1276			281	153							
Turn Bay Length (ft)	160	135	115									
Base Capacity (vph)	680	533	193	558	510	851						
Starvation Cap Reductn	0	0	0	0	128	222						
Spillback Cap Reductn	0	0	0	57	0	0						
Storage Cap Reductn	0	0	0	0	0	0						
Reduced v/c Ratio	0.52	0.17	0.47	0.96	1.00	0.76						

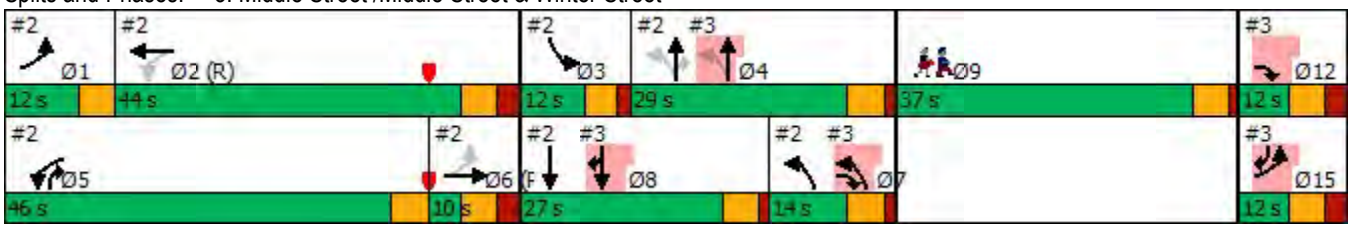
Intersection Summary
Cycle Length: 146

Lane Group	Ø12
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	12
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	11.5
Total Split (s)	12.0
Total Split (%)	8%
Maximum Green (s)	5.5
Yellow Time (s)	4.0
All-Red Time (s)	2.5
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 146
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
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: Middle Street /Middle Street & Winter Street





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	319	84	69	370	341	428
Future Volume (vph)	319	84	69	370	341	428
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	10	12	11	11
Total Lost time (s)	4.0	3.0	5.5	5.5	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3255	1546	1685	3471	3388	1531
Flt Permitted	0.95	1.00	0.52	1.00	1.00	1.00
Satd. Flow (perm)	3255	1546	931	3471	3388	1531
Peak-hour factor, PHF	0.91	0.91	0.77	0.77	0.89	0.89
Adj. Flow (vph)	351	92	90	481	383	481
RTOR Reduction (vph)	0	66	0	0	0	316
Lane Group Flow (vph)	351	26	90	481	383	165
Heavy Vehicles (%)	4%	1%	0%	4%	3%	2%
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pt+ov
Protected Phases	15	7 12	7	4	8	8 15
Permitted Phases			4			
Actuated Green, G (s)	28.0	36.2	23.2	23.2	22.0	50.0
Effective Green, g (s)	30.5	41.2	23.2	23.2	22.0	50.0
Actuated g/C Ratio	0.21	0.28	0.16	0.16	0.15	0.34
Clearance Time (s)	6.5		5.5	5.5	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	679	436	190	551	510	524
v/s Ratio Prot	c0.11	0.02	0.03	c0.14	c0.11	0.11
v/s Ratio Perm			0.05			
v/c Ratio	0.52	0.06	0.47	0.87	0.75	0.31
Uniform Delay, d1	51.2	38.3	57.2	60.0	59.4	35.4
Progression Factor	1.00	1.00	1.00	1.00	0.60	3.53
Incremental Delay, d2	0.7	0.1	1.9	14.2	3.8	0.2
Delay (s)	51.9	38.3	59.0	74.2	39.2	124.9
Level of Service	D	D	E	E	D	F
Approach Delay (s)	49.1			71.8	86.9	
Approach LOS	D			E	F	

Intersection Summary			
HCM 2000 Control Delay	73.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	146.0	Sum of lost time (s)	32.5
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø1	Ø2	Ø3	Ø5	Ø6	Ø9
Lane Configurations												
Traffic Volume (vph)	771	135	1	192	453	390						
Future Volume (vph)	771	135	1	192	453	390						
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00						
Frt		0.850				0.850						
Flt Protected	0.950		0.950									
Satd. Flow (prot)	3351	1531	842	3438	3421	1531						
Flt Permitted	0.950		0.297									
Satd. Flow (perm)	3351	1531	263	3438	3421	1531						
Satd. Flow (RTOR)		62				448						
Adj. Flow (vph)	876	153	1	259	521	448						
Lane Group Flow (vph)	876	153	1	259	521	448						
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pt+ov						
Protected Phases	15	7 12	7	4	8	8 15	1	2	3	5	6	9
Permitted Phases			4									
Detector Phase	15	7 12	7	4	8	8 15						
Switch Phase												
Minimum Initial (s)	1.0		1.0	1.0	5.0		5.0	1.0	5.0	5.0	1.0	5.0
Minimum Split (s)	8.0		8.0	7.0	10.0		10.0	7.5	10.0	22.5	7.5	37.0
Total Split (s)	12.0		14.0	29.0	27.0		12.0	44.0	12.0	46.0	10.0	37.0
Total Split (%)	8.2%		9.6%	19.9%	18.5%		8%	30%	8%	32%	7%	25%
Maximum Green (s)	5.5		8.5	23.5	22.0		8.0	37.5	7.0	42.0	3.5	32.0
Yellow Time (s)	4.0		4.0	4.0	4.0		4.0	4.0	3.5	4.0	4.0	4.0
All-Red Time (s)	2.5		1.5	1.5	1.0		0.0	2.5	1.5	0.0	2.5	1.0
Lost Time Adjust (s)	-2.5		0.0	0.0	0.0							
Total Lost Time (s)	4.0		5.5	5.5	5.0							
Lead/Lag			Lag	Lag	Lead		Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?			Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	None	None		None	C-Min	None	Min	C-Min	None
Walk Time (s)												7.0
Flash Dont Walk (s)												25.0
Pedestrian Calls (#/hr)												12
v/c Ratio	1.27	0.30	0.01	0.47	1.01	0.54						
Control Delay	172.6	20.5	53.0	58.7	65.6	8.4						
Queue Delay	5.9	0.0	0.0	1.9	32.4	6.1						
Total Delay	178.5	20.5	53.0	60.7	98.0	14.5						
Queue Length 50th (ft)	403	54	1	119	~207	36						
Queue Length 95th (ft)	#907	102	6	134	m192	m21						
Internal Link Dist (ft)	1276			281	153							
Turn Bay Length (ft)	160	135	115									
Base Capacity (vph)	692	504	76	553	515	827						
Starvation Cap Reductn	0	0	0	0	124	318						
Spillback Cap Reductn	347	0	0	167	0	0						
Storage Cap Reductn	0	0	0	0	0	0						
Reduced v/c Ratio	2.54	0.30	0.01	0.67	1.33	0.88						

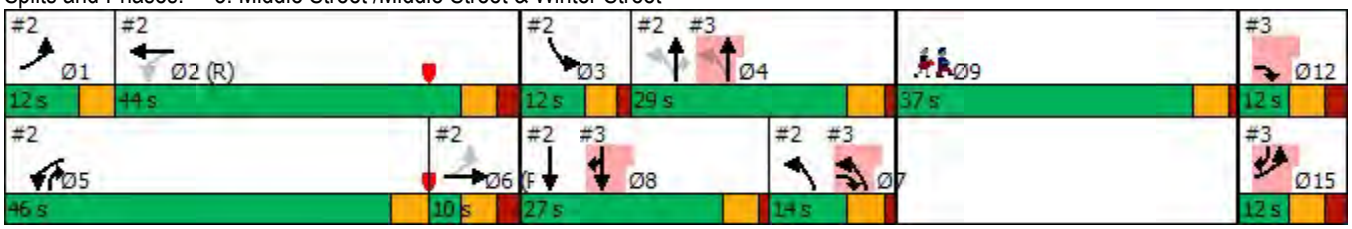
Intersection Summary
Cycle Length: 146

Lane Group	Ø12
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	12
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	11.5
Total Split (s)	12.0
Total Split (%)	8%
Maximum Green (s)	5.5
Yellow Time (s)	4.0
All-Red Time (s)	2.5
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 146
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ 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: Middle Street /Middle Street & Winter Street





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	771	135	1	192	453	390
Future Volume (vph)	771	135	1	192	453	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	10	12	11	11
Total Lost time (s)	4.0	3.0	5.5	5.5	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3351	1531	842	3438	3421	1531
Flt Permitted	0.95	1.00	0.30	1.00	1.00	1.00
Satd. Flow (perm)	3351	1531	264	3438	3421	1531
Peak-hour factor, PHF	0.88	0.88	0.74	0.74	0.87	0.87
Adj. Flow (vph)	876	153	1	259	521	448
RTOR Reduction (vph)	0	45	0	0	0	295
Lane Group Flow (vph)	876	108	1	259	521	153
Heavy Vehicles (%)	1%	2%	100%	5%	2%	2%
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pt+ov
Protected Phases	15	7 12	7	4	8	8 15
Permitted Phases			4			
Actuated Green, G (s)	27.7	36.2	23.5	23.5	22.0	49.7
Effective Green, g (s)	30.2	41.2	23.5	23.5	22.0	49.7
Actuated g/C Ratio	0.21	0.28	0.16	0.16	0.15	0.34
Clearance Time (s)	6.5		5.5	5.5	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	693	432	76	553	515	521
v/s Ratio Prot	c0.26	0.07	0.00	c0.08	c0.15	0.10
v/s Ratio Perm			0.00			
v/c Ratio	1.26	0.25	0.01	0.47	1.01	0.29
Uniform Delay, d1	57.9	40.5	56.1	55.6	62.0	35.3
Progression Factor	1.00	1.00	1.00	1.00	0.60	3.07
Incremental Delay, d2	130.2	0.3	0.1	0.6	27.3	0.1
Delay (s)	188.1	40.8	56.1	56.2	64.5	108.3
Level of Service	F	D	E	E	E	F
Approach Delay (s)	166.2			56.2	84.8	
Approach LOS	F			E	F	

Intersection Summary			
HCM 2000 Control Delay	118.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	146.0	Sum of lost time (s)	32.5
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø1	Ø2	Ø3	Ø5	Ø6	Ø9
Lane Configurations												
Traffic Volume (vph)	356	103	109	515	418	435						
Future Volume (vph)	356	103	109	515	418	435						
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00						
Frt		0.850				0.850						
Flt Protected	0.950		0.950									
Satd. Flow (prot)	3351	1531	1685	3574	3421	1546						
Flt Permitted	0.950		0.425									
Satd. Flow (perm)	3351	1531	754	3574	3421	1546						
Satd. Flow (RTOR)		102				473						
Adj. Flow (vph)	396	114	121	572	454	473						
Lane Group Flow (vph)	396	114	121	572	454	473						
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pt+ov						
Protected Phases	15	7 12	7	4	8	8 15	1	2	3	5	6	9
Permitted Phases			4									
Detector Phase	15	7 12	7	4	8	8 15						
Switch Phase												
Minimum Initial (s)	1.0		1.0	1.0	5.0		5.0	1.0	5.0	5.0	1.0	5.0
Minimum Split (s)	8.0		8.0	7.0	10.0		10.0	7.5	10.0	22.5	7.5	37.0
Total Split (s)	12.0		14.0	29.0	27.0		12.0	44.0	12.0	46.0	10.0	37.0
Total Split (%)	8.2%		9.6%	19.9%	18.5%		8%	30%	8%	32%	7%	25%
Maximum Green (s)	5.5		8.5	23.5	22.0		8.0	37.5	7.0	42.0	3.5	32.0
Yellow Time (s)	4.0		4.0	4.0	4.0		4.0	4.0	3.5	4.0	4.0	4.0
All-Red Time (s)	2.5		1.5	1.5	1.0		0.0	2.5	1.5	0.0	2.5	1.0
Lost Time Adjust (s)	-2.5		0.0	0.0	0.0							
Total Lost Time (s)	4.0		5.5	5.5	5.0							
Lead/Lag			Lag	Lag	Lead		Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?			Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	None	None		None	C-Min	None	Min	C-Min	None
Walk Time (s)												7.0
Flash Dont Walk (s)												25.0
Pedestrian Calls (#/hr)												1
v/c Ratio	0.54	0.21	0.69	0.99	0.88	0.55						
Control Delay	53.6	8.6	81.1	96.7	47.4	9.9						
Queue Delay	0.0	0.0	0.0	33.4	50.4	2.3						
Total Delay	53.6	8.6	81.1	130.1	97.8	12.2						
Queue Length 50th (ft)	170	8	105	290	164	48						
Queue Length 95th (ft)	#418	46	#189	#417	m185	m79						
Internal Link Dist (ft)	1276			281	153							
Turn Bay Length (ft)	160	135	115									
Base Capacity (vph)	729	554	175	575	515	861						
Starvation Cap Reductn	0	0	0	0	135	253						
Spillback Cap Reductn	2	0	0	53	0	0						
Storage Cap Reductn	0	0	0	0	0	0						
Reduced v/c Ratio	0.54	0.21	0.69	1.10	1.19	0.78						

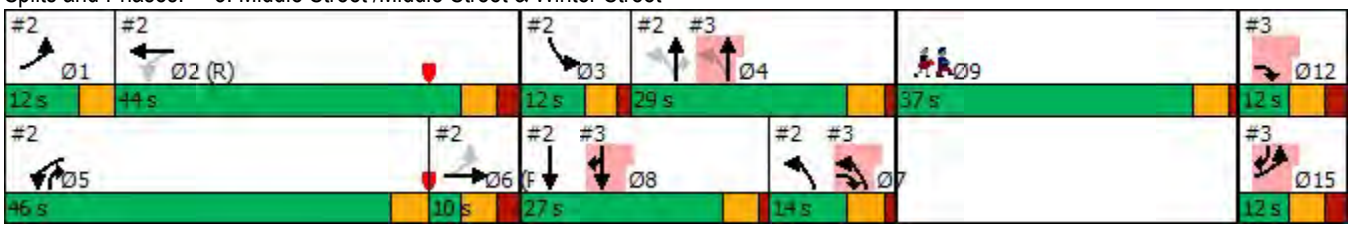
Intersection Summary
Cycle Length: 146

Lane Group	Ø12
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	12
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	11.5
Total Split (s)	12.0
Total Split (%)	8%
Maximum Green (s)	5.5
Yellow Time (s)	4.0
All-Red Time (s)	2.5
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 146
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
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: Middle Street /Middle Street & Winter Street





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	356	103	109	515	418	435
Future Volume (vph)	356	103	109	515	418	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	10	12	11	11
Total Lost time (s)	4.0	3.0	5.5	5.5	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3351	1531	1685	3574	3421	1546
Flt Permitted	0.95	1.00	0.43	1.00	1.00	1.00
Satd. Flow (perm)	3351	1531	754	3574	3421	1546
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.92	0.92
Adj. Flow (vph)	396	114	121	572	454	473
RTOR Reduction (vph)	0	72	0	0	0	307
Lane Group Flow (vph)	396	42	121	572	454	166
Heavy Vehicles (%)	1%	2%	0%	1%	2%	1%
Turn Type	Prot	pt+ov	pm+pt	NA	NA	pt+ov
Protected Phases	15	7 12	7	4	8	8 15
Permitted Phases			4			
Actuated Green, G (s)	29.3	37.8	23.5	23.5	22.0	51.3
Effective Green, g (s)	31.8	42.8	23.5	23.5	22.0	51.3
Actuated g/C Ratio	0.22	0.29	0.16	0.16	0.15	0.35
Clearance Time (s)	6.5		5.5	5.5	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	729	448	175	575	515	543
v/s Ratio Prot	c0.12	0.03	0.04	c0.16	c0.13	0.11
v/s Ratio Perm			0.07			
v/c Ratio	0.54	0.09	0.69	0.99	0.88	0.31
Uniform Delay, d1	50.7	37.5	59.2	61.2	60.7	34.4
Progression Factor	1.00	1.00	1.00	1.00	0.61	3.77
Incremental Delay, d2	0.8	0.1	11.2	36.0	8.2	0.1
Delay (s)	51.5	37.6	70.4	97.2	45.0	129.9
Level of Service	D	D	E	F	D	F
Approach Delay (s)	48.4			92.5	88.3	
Approach LOS	D			F	F	

Intersection Summary			
HCM 2000 Control Delay	80.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	146.0	Sum of lost time (s)	32.5
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Route 18 at Winter Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	64	175	474	52	51	141	393	403	25	345	18
Future Volume (vph)	36	64	175	474	52	51	141	393	403	25	345	18
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850		0.926			0.936			0.993	
Flt Protected	0.950			0.950				0.993			0.997	
Satd. Flow (prot)	1805	1837	1531	3433	1684	0	0	3145	0	0	3327	0
Flt Permitted	0.950			0.950				0.761			0.850	
Satd. Flow (perm)	1805	1837	1531	3433	1684	0	0	2410	0	0	2837	0
Satd. Flow (RTOR)			206		29			178			4	
Adj. Flow (vph)	42	75	206	504	55	54	157	437	448	29	397	21
Lane Group Flow (vph)	42	75	206	504	109	0	0	1042	0	0	447	0
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4		8	8		5	2			6	
Permitted Phases			4				2			6		
Detector Phase	4	4	4	8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.5	10.5	10.5	22.5	22.5		9.5	22.5		22.5	22.5	
Total Split (s)	17.5	17.5	17.5	28.5	28.5		13.5	73.5		60.0	60.0	
Total Split (%)	11.9%	11.9%	11.9%	19.5%	19.5%		9.2%	50.2%		41.0%	41.0%	
Maximum Green (s)	12.0	12.0	12.0	23.0	23.0		10.0	68.0		54.5	54.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5			-1.5			-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.20	0.35	0.57	0.63	0.26			0.78			0.30	
Control Delay	46.5	49.3	13.6	39.5	28.1			19.7			13.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay	46.5	49.3	13.6	39.5	28.1			19.7			13.5	
Queue Length 50th (ft)	24	44	0	145	40			227			81	
Queue Length 95th (ft)	63	97	59	248	106			320			110	
Internal Link Dist (ft)		109			525			903			337	
Turn Bay Length (ft)	90		90	370								
Base Capacity (vph)	261	266	398	903	464			1839			1787	
Starvation Cap Reductn	0	0	0	0	0			0			0	
Spillback Cap Reductn	0	0	0	0	0			0			0	
Storage Cap Reductn	0	0	0	0	0			0			0	
Reduced v/c Ratio	0.16	0.28	0.52	0.56	0.23			0.57			0.25	

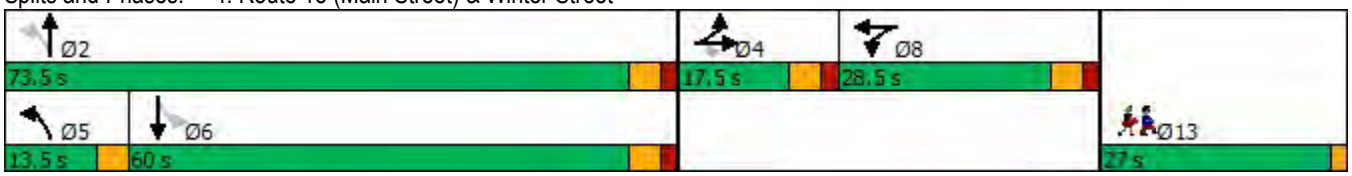
Intersection Summary
Cycle Length: 146.5

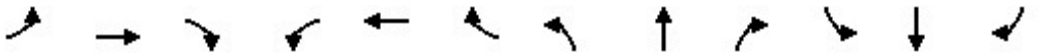
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	18%
Maximum Green (s)	25.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	0
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 96.6
Natural Cycle: 105
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Route 18 (Main Street) & Winter Street

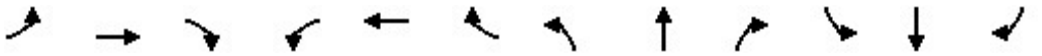




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	64	175	474	52	51	141	393	403	25	345	18
Future Volume (vph)	36	64	175	474	52	51	141	393	403	25	345	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	11	11	11	11	11	11	11	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00			0.95			0.95	
Frt	1.00	1.00	0.85	1.00	0.93			0.94			0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1805	1837	1531	3433	1683			3142			3326	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.76			0.85	
Satd. Flow (perm)	1805	1837	1531	3433	1683			2408			2835	
Peak-hour factor, PHF	0.85	0.85	0.85	0.94	0.94	0.94	0.90	0.90	0.90	0.87	0.87	0.87
Adj. Flow (vph)	42	75	206	504	55	54	157	437	448	29	397	21
RTOR Reduction (vph)	0	0	182	0	22	0	0	85	0	0	2	0
Lane Group Flow (vph)	42	75	24	504	87	0	0	957	0	0	445	0
Heavy Vehicles (%)	0%	0%	2%	2%	0%	2%	1%	3%	4%	0%	4%	6%
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4		8	8		5	2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	9.6	9.6	9.6	21.1	21.1			48.8			48.8	
Effective Green, g (s)	11.1	11.1	11.1	22.6	22.6			50.3			50.3	
Actuated g/C Ratio	0.12	0.12	0.12	0.24	0.24			0.52			0.52	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5			5.5			5.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	208	212	177	808	396			1261			1485	
v/s Ratio Prot	0.02	c0.04		c0.15	0.05							
v/s Ratio Perm			0.02					c0.40			0.16	
v/c Ratio	0.20	0.35	0.13	0.62	0.22			0.76			0.30	
Uniform Delay, d1	38.4	39.1	38.1	32.9	29.6			18.1			12.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.5	1.0	0.3	1.5	0.3			2.7			0.1	
Delay (s)	38.9	40.2	38.5	34.4	29.9			20.7			13.0	
Level of Service	D	D	D	C	C			C			B	
Approach Delay (s)		38.9			33.6			20.7			13.0	
Approach LOS		D			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	53	173	398	73	43	164	519	485	24	561	54
Future Volume (vph)	51	53	173	398	73	43	164	519	485	24	561	54
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850		0.944			0.938			0.987	
Flt Protected	0.950			0.950				0.993			0.998	
Satd. Flow (prot)	1736	1837	1546	3433	1734	0	0	3204	0	0	3408	0
Flt Permitted	0.950			0.950				0.667			0.863	
Satd. Flow (perm)	1736	1837	1546	3433	1734	0	0	2152	0	0	2947	0
Satd. Flow (RTOR)			192		17			166			8	
Adj. Flow (vph)	57	59	192	437	80	47	174	552	516	27	630	61
Lane Group Flow (vph)	57	59	192	437	127	0	0	1242	0	0	718	0
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4		8	8		5	2			6	
Permitted Phases			4				2			6		
Detector Phase	4	4	4	8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.5	10.5	10.5	22.5	22.5		9.5	22.5		22.5	22.5	
Total Split (s)	17.5	17.5	17.5	28.5	28.5		13.5	73.5		60.0	60.0	
Total Split (%)	11.9%	11.9%	11.9%	19.5%	19.5%		9.2%	50.2%		41.0%	41.0%	
Maximum Green (s)	12.0	12.0	12.0	23.0	23.0		10.0	68.0		54.5	54.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5			-1.5			-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.37	0.36	0.62	0.71	0.39			0.93			0.41	
Control Delay	61.5	60.8	16.9	54.0	42.8			33.3			16.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay	61.5	60.8	16.9	54.0	42.8			33.3			16.0	
Queue Length 50th (ft)	40	41	0	154	70			352			133	
Queue Length 95th (ft)	101	103	79	269	163			#813			298	
Internal Link Dist (ft)		109			525			903			337	
Turn Bay Length (ft)	90		90	370								
Base Capacity (vph)	199	211	347	716	375			1341			1748	
Starvation Cap Reductn	0	0	0	0	0			0			0	
Spillback Cap Reductn	0	0	0	0	0			0			0	
Storage Cap Reductn	0	0	0	0	0			0			0	
Reduced v/c Ratio	0.29	0.28	0.55	0.61	0.34			0.93			0.41	

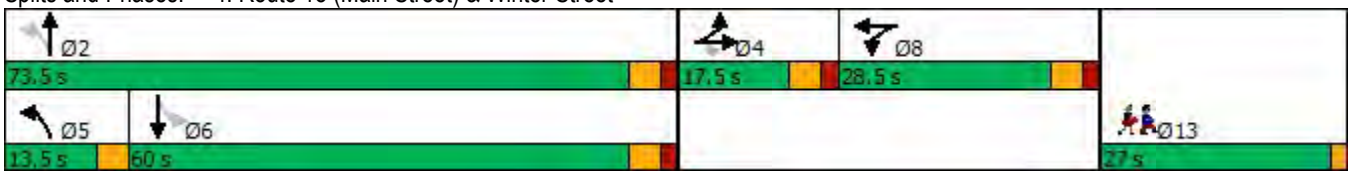
Intersection Summary
Cycle Length: 146.5

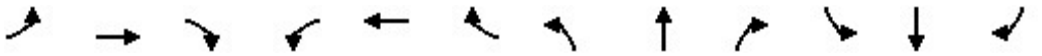
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	18%
Maximum Green (s)	25.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	1
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 118.9
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Route 18 (Main Street) & Winter Street

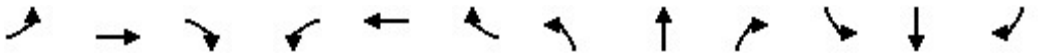




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	53	173	398	73	43	164	519	485	24	561	54
Future Volume (vph)	51	53	173	398	73	43	164	519	485	24	561	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	11	11	11	11	11	11	11	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00			0.95			0.95	
Frt	1.00	1.00	0.85	1.00	0.94			0.94			0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1736	1837	1546	3433	1735			3203			3409	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.67			0.86	
Satd. Flow (perm)	1736	1837	1546	3433	1735			2152			2946	
Peak-hour factor, PHF	0.90	0.90	0.90	0.91	0.91	0.91	0.94	0.94	0.94	0.89	0.89	0.89
Adj. Flow (vph)	57	59	192	437	80	47	174	552	516	27	630	61
RTOR Reduction (vph)	0	0	175	0	14	0	0	69	0	0	3	0
Lane Group Flow (vph)	57	59	17	437	113	0	0	1173	0	0	715	0
Heavy Vehicles (%)	4%	0%	1%	2%	0%	0%	1%	2%	1%	0%	1%	0%
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4		8	8		5	2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	9.0	9.0	9.0	19.9	19.9			68.9			68.9	
Effective Green, g (s)	10.5	10.5	10.5	21.4	21.4			70.4			70.4	
Actuated g/C Ratio	0.09	0.09	0.09	0.18	0.18			0.58			0.58	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5			5.5			5.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	151	160	134	610	308			1258			1722	
v/s Ratio Prot	c0.03	0.03		c0.13	0.07							
v/s Ratio Perm			0.01					c0.55			0.24	
v/c Ratio	0.38	0.37	0.12	0.72	0.37			0.93			0.42	
Uniform Delay, d1	51.9	51.8	50.7	46.6	43.5			22.8			13.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.6	1.4	0.4	4.0	0.7			12.4			0.2	
Delay (s)	53.4	53.3	51.1	50.6	44.3			35.3			13.9	
Level of Service	D	D	D	D	D			D			B	
Approach Delay (s)		52.0			49.2			35.3			13.9	
Approach LOS		D			D			D			B	

Intersection Summary			
HCM 2000 Control Delay	34.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.4	Sum of lost time (s)	17.5
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	66	135	424	85	77	105	512	400	43	595	54
Future Volume (vph)	51	66	135	424	85	77	105	512	400	43	595	54
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850		0.929			0.941			0.988	
Flt Protected	0.950			0.950				0.995			0.997	
Satd. Flow (prot)	1805	1783	1546	3467	1697	0	0	3222	0	0	3408	0
Flt Permitted	0.950			0.950				0.712			0.786	
Satd. Flow (perm)	1805	1783	1546	3467	1697	0	0	2306	0	0	2687	0
Satd. Flow (RTOR)			144		27			138			7	
Adj. Flow (vph)	54	70	144	442	89	80	112	545	426	48	661	60
Lane Group Flow (vph)	54	70	144	442	169	0	0	1083	0	0	769	0
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4		8	8		5	2			6	
Permitted Phases			4				2			6		
Detector Phase	4	4	4	8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.5	10.5	10.5	22.5	22.5		9.5	22.5		22.5	22.5	
Total Split (s)	17.5	17.5	17.5	28.5	28.5		13.5	73.5		60.0	60.0	
Total Split (%)	11.9%	11.9%	11.9%	19.5%	19.5%		9.2%	50.2%		41.0%	41.0%	
Maximum Green (s)	12.0	12.0	12.0	23.0	23.0		10.0	68.0		54.5	54.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.5	-1.5	-1.5	-1.5	-1.5			-1.5			-1.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.32	0.42	0.52	0.70	0.51			0.77			0.49	
Control Delay	59.4	62.2	16.3	53.6	44.5			22.8			17.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay	59.4	62.2	16.3	53.6	44.5			22.8			17.7	
Queue Length 50th (ft)	38	50	0	157	94			253			154	
Queue Length 95th (ft)	96	118	69	272	207			#621			345	
Internal Link Dist (ft)		109			525			903			337	
Turn Bay Length (ft)	90		90	370								
Base Capacity (vph)	208	206	306	728	377			1430			1574	
Starvation Cap Reductn	0	0	0	0	0			0			0	
Spillback Cap Reductn	0	0	0	0	0			0			0	
Storage Cap Reductn	0	0	0	0	0			0			0	
Reduced v/c Ratio	0.26	0.34	0.47	0.61	0.45			0.76			0.49	

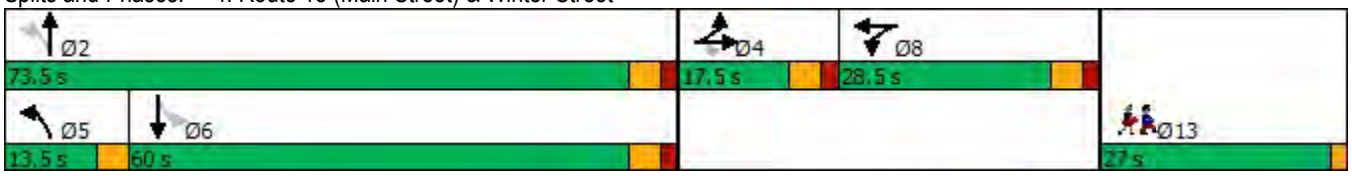
Intersection Summary
Cycle Length: 146.5

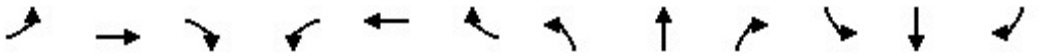
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	18%
Maximum Green (s)	25.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	3
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 118.4
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Route 18 (Main Street) & Winter Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	66	135	424	85	77	105	512	400	43	595	54
Future Volume (vph)	51	66	135	424	85	77	105	512	400	43	595	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	11	11	11	11	11	11	11	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00			0.95			0.95	
Frt	1.00	1.00	0.85	1.00	0.93			0.94			0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1805	1783	1546	3467	1697			3222			3409	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.71			0.79	
Satd. Flow (perm)	1805	1783	1546	3467	1697			2307			2689	
Peak-hour factor, PHF	0.94	0.94	0.94	0.96	0.96	0.96	0.94	0.94	0.94	0.90	0.90	0.90
Adj. Flow (vph)	54	70	144	442	89	80	112	545	426	48	661	60
RTOR Reduction (vph)	0	0	131	0	22	0	0	58	0	0	3	0
Lane Group Flow (vph)	54	70	13	442	147	0	0	1025	0	0	766	0
Heavy Vehicles (%)	0%	3%	1%	1%	1%	0%	1%	1%	2%	0%	1%	0%
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4		8	8		5	2			6	
Permitted Phases			4				2			6		
Actuated Green, G (s)	9.6	9.6	9.6	20.0	20.0			67.8			67.8	
Effective Green, g (s)	11.1	11.1	11.1	21.5	21.5			69.3			69.3	
Actuated g/C Ratio	0.09	0.09	0.09	0.18	0.18			0.58			0.58	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5			5.5			5.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	167	165	143	621	304			1333			1554	
v/s Ratio Prot	0.03	c0.04		c0.13	0.09							
v/s Ratio Perm			0.01					c0.44			0.28	
v/c Ratio	0.32	0.42	0.09	0.71	0.48			0.77			0.49	
Uniform Delay, d1	50.9	51.4	49.8	46.3	44.2			19.2			14.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.1	1.8	0.3	3.9	1.2			2.7			0.2	
Delay (s)	52.0	53.1	50.1	50.1	45.4			21.9			15.2	
Level of Service	D	D	D	D	D			C			B	
Approach Delay (s)		51.3			48.8			21.9			15.2	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	119.9	Sum of lost time (s)	17.5
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Route 18 at the Route 3 Northbound Ramps

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	155	0	227	0	681	0	0	528	500
Future Vol, veh/h	0	0	0	155	0	227	0	681	0	0	528	500
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	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	25	25	84	84	84	92	92	92	95	95	95
Heavy Vehicles, %	0	0	0	1	0	2	0	5	0	0	3	2
Mvmt Flow	0	0	0	185	0	270	0	740	0	0	556	526

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1018	1296	370	-	0	-	-	-	0
Stage 1	740	740	-	-	-	-	-	-	-
Stage 2	278	556	-	-	-	-	-	-	-
Critical Hdwy	6.82	6.5	6.94	-	-	-	-	-	-
Critical Hdwy Stg 1	5.82	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.82	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4	3.32	-	-	-	-	-	-
Pot Cap-1 Maneuver	235	164	627	0	-	0	0	-	0
Stage 1	435	426	-	0	-	0	0	-	0
Stage 2	747	516	-	0	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	235	0	627	-	-	-	-	-	-
Mov Cap-2 Maneuver	235	0	-	-	-	-	-	-	-
Stage 1	435	0	-	-	-	-	-	-	-
Stage 2	747	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33.3	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	235	627	-
HCM Lane V/C Ratio	-	0.785	0.431	-
HCM Control Delay (s)	-	60	15	-
HCM Lane LOS	-	F	C	-
HCM 95th %tile Q(veh)	-	5.7	2.2	-

Intersection	
Int Delay, s/veh	9.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	117	0	346	0	864	0	0	710	468
Future Vol, veh/h	0	0	0	117	0	346	0	864	0	0	710	468
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	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	0	-	-	-	-	-	100
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	25	25	95	95	95	90	90	90	94	94	94
Heavy Vehicles, %	0	0	0	1	0	1	0	1	0	0	1	1
Mvmt Flow	0	0	0	123	0	364	0	960	0	0	755	498

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1338	1715	480	-	0	-	-	-	0
Stage 1	960	960	-	-	-	-	-	-	-
Stage 2	378	755	-	-	-	-	-	-	-
Critical Hdwy	6.82	6.5	6.92	-	-	-	-	-	-
Critical Hdwy Stg 1	5.82	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.82	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4	3.31	-	-	-	-	-	-
Pot Cap-1 Maneuver	146	91	535	0	-	0	0	-	0
Stage 1	335	338	-	0	-	0	0	-	0
Stage 2	666	420	-	0	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	146	0	535	-	-	-	-	-	-
Mov Cap-2 Maneuver	146	0	-	-	-	-	-	-	-
Stage 1	335	0	-	-	-	-	-	-	-
Stage 2	666	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	43.2	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	146	535	-
HCM Lane V/C Ratio	-	0.844	0.681	-
HCM Control Delay (s)	-	97.4	24.9	-
HCM Lane LOS	-	F	C	-
HCM 95th %tile Q(veh)	-	5.5	5.2	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	56	0	160	0	904	0	0	557	564
Future Vol, veh/h	0	0	0	56	0	160	0	904	0	0	557	564
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	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	0	-	-	-	-	-	0
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	25	25	78	78	78	92	92	92	96	96	96
Heavy Vehicles, %	0	0	0	4	0	1	0	1	0	0	1	1
Mvmt Flow	0	0	0	72	0	205	0	983	0	0	580	588

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1273	1563	492	-	0	-	-	-	0
Stage 1	983	983	-	-	-	-	-	-	-
Stage 2	290	580	-	-	-	-	-	-	-
Critical Hdwy	6.88	6.5	6.92	-	-	-	-	-	-
Critical Hdwy Stg 1	5.88	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.88	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.54	4	3.31	-	-	-	-	-	-
Pot Cap-1 Maneuver	157	113	525	0	-	0	0	-	0
Stage 1	319	329	-	0	-	0	0	-	0
Stage 2	728	503	-	0	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	157	0	525	-	-	-	-	-	-
Mov Cap-2 Maneuver	157	0	-	-	-	-	-	-	-
Stage 1	319	0	-	-	-	-	-	-	-
Stage 2	728	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	-	157	525	-
HCM Lane V/C Ratio	-	0.457	0.391	-
HCM Control Delay (s)	-	45.9	16.2	-
HCM Lane LOS	-	E	C	-
HCM 95th %tile Q(veh)	-	2.1	1.8	-

Route 18 at the Route 3 Southbound Ramps

HCS Freeway Facilities Report

Project Information

Analyst	TJH	Date	7/7/2022
Agency	Vanasse & Associates	Analysis Year	2022 Existing
Jurisdiction	MassDOT	Time Analyzed	Weekday Morning
Facility Name	Route 18 NB	Units	U.S. Customary
Project Description	Route 18 NB		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	0.34		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	GP Lane, ft	ML Type	ML Lanes
1	Basic	Basic	NB	150	2	ML Basic	1
2	Diverge	Diverge	NB at SB On	300	2	ML Basic	1
3	Basic	Basic	NB	150	2	ML Basic	1
4	Merge	Merge	NB at SB Off	450	2	ML Basic	1
5	Diverge	Diverge	NB at NB On	450	2	ML Basic	1
6	Basic	Basic	NB	315	2	ML Basic	1

Facility Segment Data

Segment 1

General Purpose Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.96	0.962	1545	4800	0.32	75.4	10.2	A

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

Segment 2

General Purpose Lane: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.96	0.96	0.962	0.971	1545	167	4800	2000	0.32	0.08	60.6	60.6	12.7	13.9	B

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

Segment 3

General Purpose Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.96	0.962	1376	4800	0.29	65.1	9.1	A

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

Segment 4

General Purpose Lane: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.96	0.84	0.962	0.935	1842	466	4800	2000	0.38	0.23	65.7	65.7	14.0	14.7	B

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

Segment 5

General Purpose Lane: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.92	0.92	0.952	0.952	1869	1092	4800	2000	0.39	0.55	57.8	57.8	16.2	16.7	B

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

Segment 6

General Purpose Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.952	778	4800	0.16	65.9	5.2	A

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

General Purpose Lane Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	128	112	0.34	8.40	62.9	12.1	11.6	0.30	B

Managed Lane Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	0	0	0.00	0.00	75.4	0.0	0.0	0.30	A

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	128	112	0.34	8.40	62.9	8.1	7.7	0.30	A

General Purpose Lane Overall Results

Space Mean Speed, mi/h	62.9	Density, veh/mi/ln	11.6
Average Travel Time, min	0.30	Density, pc/mi/ln	12.1

Managed Lane Overall Results

Space Mean Speed, mi/h	75.4	Density, veh/mi/ln	0.0
Average Travel Time, min	0.30	Density, pc/mi/ln	0.0

Facility Overall Results

Space Mean Speed, mi/h	62.9	Average Density, veh/mi/ln	7.7
Average Travel Time, min	0.30	Average Density, pc/mi/ln	8.1
Total VMT, veh-mi	128	Total VHD, veh-h	0.34
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	8.40

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HCS Freeway Facilities Report

Project Information

Analyst	TJH	Date	7/7/2022
Agency	Vanasse & Associates	Analysis Year	2022 Existing
Jurisdiction	MassDOT	Time Analyzed	Weekday Morning
Facility Name	Route 18 SB	Units	U.S. Customary
Project Description	Route 18 SB		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	0.37		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	SB	950	2
2	Diverge	Diverge	SB at SB On	300	2
3	Basic	Basic	SB	150	2
4	Merge	Merge	SB at SB Off	400	2
5	Basic	Basic	SB	150	2

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.86	0.980	810	4800	0.17	75.4	5.4	A

Segment 2: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.86	0.86	0.980	0.980	810	339	4800	2000	0.17	0.17	60.1	60.1	6.7	7.6	A

Segment 3: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.86	0.980	471	4800	0.10	64.8	3.1	A

Segment 4: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.86	0.88	0.980	0.952	1482	1011	4800	2000	0.31	0.51	66.0	66.0	11.2	11.6	B

Segment 5: Basic

AP	PHF	fHV	Flow Rate	Capacity	d/c	Speed	Density	LOS

			(pc/h)	(pc/h)	Ratio	(mi/h)	(pc/mi/ln)	
1	0.88	0.962	1469	4800	0.31	69.4	9.7	A

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	88	60	0.11	2.72	69.0	6.9	6.8	0.30	A

Facility Overall Results

Space Mean Speed, mi/h	69.0	Average Density, veh/mi/ln	6.8
Average Travel Time, min	0.30	Average Density, pc/mi/ln	6.9
Total VMT, veh-mi	88	Total VHD, veh-h	0.11
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	2.72

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HCS Freeway Facilities Report

Project Information

Analyst	TJH	Date	7/7/2022
Agency	Vanasse & Associates	Analysis Year	2022 Existing
Jurisdiction	MassDOT	Time Analyzed	Weekday Evening
Facility Name	Route 18 NB	Units	U.S. Customary
Project Description	Route 18 NB		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	0.34		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	GP Lane, ft	ML Type	ML Lanes
1	Basic	Basic	NB	150	2	ML Basic	1
2	Diverge	Diverge	NB at SB On	300	2	ML Basic	1
3	Basic	Basic	NB	150	2	ML Basic	1
4	Merge	Merge	NB at SB Off	450	2	ML Basic	1
5	Diverge	Diverge	NB at NB On	450	2	ML Basic	1
6	Basic	Basic	NB	315	2	ML Basic	1

Facility Segment Data

Segment 1

General Purpose Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.980	1328	4800	0.28	75.4	8.8	A

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

Segment 2

General Purpose Lane: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.95	0.95	0.980	1.000	1328	125	4800	2000	0.28	0.06	60.7	60.7	10.9	12.1	B

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

Segment 3

General Purpose Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.980	1200	4800	0.25	65.2	8.0	A

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

Segment 4

General Purpose Lane: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.95	0.97	0.980	0.980	1742	542	4800	2000	0.36	0.27	65.8	65.8	13.2	13.9	B

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

Segment 5

General Purpose Lane: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.90	0.90	0.980	0.980	1850	871	4800	2000	0.39	0.44	58.5	58.5	15.8	16.6	B

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

Segment 6

General Purpose Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.90	0.990	970	4800	0.20	66.3	6.4	A

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

General Purpose Lane Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	125	106	0.32	8.03	63.2	11.5	11.3	0.30	B

Managed Lane Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	0	0	0.00	0.00	75.4	0.0	0.0	0.30	A

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	125	106	0.32	8.03	63.2	7.7	7.5	0.30	A

General Purpose Lane Overall Results

Space Mean Speed, mi/h	63.2	Density, veh/mi/ln	11.3
Average Travel Time, min	0.30	Density, pc/mi/ln	11.5

Managed Lane Overall Results

Space Mean Speed, mi/h	75.4	Density, veh/mi/ln	0.0
Average Travel Time, min	0.30	Density, pc/mi/ln	0.0

Facility Overall Results

Space Mean Speed, mi/h	63.2	Average Density, veh/mi/ln	7.5
Average Travel Time, min	0.30	Average Density, pc/mi/ln	7.7
Total VMT, veh-mi	125	Total VHD, veh-h	0.32
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	8.03

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HCS Freeway Facilities Report

Project Information

Analyst	TJH	Date	7/7/2022
Agency	Vanasse & Associates	Analysis Year	2022 Existing
Jurisdiction	MassDOT	Time Analyzed	Weekday Evening
Facility Name	Route 18 SB	Units	U.S. Customary
Project Description	Route 18 SB		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	0.37		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	SB	950	2
2	Diverge	Diverge	SB at SB On	300	2
3	Basic	Basic	SB	150	2
4	Merge	Merge	SB at SB Off	400	2
5	Basic	Basic	SB	150	2

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.90	0.990	928	4800	0.19	75.4	6.2	A

Segment 2: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.90	0.90	0.990	0.980	928	330	4800	2000	0.19	0.16	60.1	60.1	7.7	8.6	A

Segment 3: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.90	0.990	602	4800	0.13	64.8	4.0	A

Segment 4: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.90	0.89	0.990	0.980	1708	1106	4800	2000	0.36	0.55	65.8	65.8	13.0	13.3	B

Segment 5: Basic

AP	PHF	fHV	Flow Rate	Capacity	d/c	Speed	Density	LOS

			(pc/h)	(pc/h)	Ratio	(mi/h)	(pc/mi/ln)	
1	0.89	0.980	1721	4800	0.36	69.3	11.4	B

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	103	74	0.13	3.23	68.9	8.1	8.0	0.30	A

Facility Overall Results

Space Mean Speed, mi/h	68.9	Average Density, veh/mi/ln	8.0
Average Travel Time, min	0.30	Average Density, pc/mi/ln	8.1
Total VMT, veh-mi	103	Total VHD, veh-h	0.13
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	3.23

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HCS Freeway Facilities Report

Project Information

Analyst	TJH	Date	7/9/2022
Agency	Vanasse & Associates	Analysis Year	2022 Existing
Jurisdiction	MassDOT	Time Analyzed	Saturday Midday
Facility Name	Route 18 NB	Units	U.S. Customary
Project Description	Route 18 NB		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	6
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	0.34		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	GP Lane, ft	ML Type	ML Lanes
1	Basic	Basic	NB	150	2	ML Basic	1
2	Diverge	Diverge	NB at SB On	300	2	ML Basic	1
3	Basic	Basic	NB	150	2	ML Basic	1
4	Merge	Merge	NB at SB Off	450	2	ML Basic	1
5	Diverge	Diverge	NB at NB On	450	2	ML Basic	1
6	Basic	Basic	NB	315	2	ML Basic	1

Facility Segment Data

Segment 1

General Purpose Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.93	0.980	1377	4800	0.29	75.4	9.1	A

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

Segment 2

General Purpose Lane: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.93	0.93	0.980	1.000	1377	86	4800	2000	0.29	0.04	60.8	60.8	11.3	12.5	B

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

Segment 3

General Purpose Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.93	0.980	1289	4800	0.27	65.3	8.5	A

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

Segment 4

General Purpose Lane: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.93	0.93	0.980	0.990	1847	558	4800	2000	0.38	0.28	65.7	65.7	14.1	14.7	B

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

Segment 5

General Purpose Lane: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.92	0.92	0.980	0.990	1873	862	4800	2000	0.39	0.43	58.5	58.5	16.0	16.8	B

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

Segment 6

General Purpose Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.92	0.990	993	4800	0.21	66.3	6.6	A

Managed Lane: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.94	1.000	0	1804	0.00	75.4	0.0	A

General Purpose Lane Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	130	110	0.33	8.29	63.2	11.9	11.7	0.30	B

Managed Lane Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	0	0	0.00	0.00	75.4	0.0	0.0	0.30	A

Facility Analysis Results

AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	130	110	0.33	8.29	63.2	8.0	7.8	0.30	A

General Purpose Lane Overall Results

Space Mean Speed, mi/h	63.2	Density, veh/mi/ln	11.7
Average Travel Time, min	0.30	Density, pc/mi/ln	11.9

Managed Lane Overall Results

Space Mean Speed, mi/h	75.4	Density, veh/mi/ln	0.0
Average Travel Time, min	0.30	Density, pc/mi/ln	0.0

Facility Overall Results

Space Mean Speed, mi/h	63.2	Average Density, veh/mi/ln	7.8
Average Travel Time, min	0.30	Average Density, pc/mi/ln	8.0
Total VMT, veh-mi	130	Total VHD, veh-h	0.33
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	8.29

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HCS Freeway Facilities Report

Project Information

Analyst	TJH	Date	7/7/2022
Agency	Vanasse & Associates	Analysis Year	2022 Existing
Jurisdiction	MassDOT	Time Analyzed	Saturday Midday
Facility Name	Route 18 SB	Units	U.S. Customary
Project Description	Route 18 SB		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	5
Total Analysis Periods	1	Analysis Period Duration, min	15
Facility Length, mi	0.37		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	SB	950	2
2	Diverge	Diverge	SB at SB On	300	2
3	Basic	Basic	SB	150	2
4	Merge	Merge	SB at SB Off	400	2
5	Basic	Basic	SB	150	2

Facility Segment Data

Segment 1: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.96	0.990	645	4800	0.13	75.4	4.3	A

Segment 2: Diverge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.96	0.96	0.990	0.990	645	148	4800	2000	0.13	0.07	60.7	60.7	5.3	6.2	A

Segment 3: Basic

AP	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.96	0.990	497	4800	0.10	65.2	3.3	A

Segment 4: Merge

AP	PHF		fHV		Flow Rate (pc/h)		Capacity (pc/h)		d/c Ratio		Speed (mi/h)		Density (pc/mi/ln)		LOS
	F	R	F	R	Freeway	Ramp	Freeway	Ramp	F	R	F	R Infl.	F	R Infl.	
1	0.96	0.87	0.990	0.980	1540	1043	4800	2000	0.32	0.52	65.9	65.9	11.7	12.1	B

Segment 5: Basic

AP	PHF	fHV	Flow Rate	Capacity	d/c	Speed	Density	LOS

			(pc/h)	(pc/h)	Ratio	(mi/h)	(pc/mi/ln)	
1	0.87	0.980	1596	4800	0.33	69.3	10.6	A

Facility Analysis Results

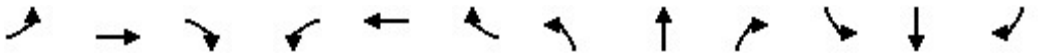
AP	VMT veh-mi/AP	VMT-Demand veh-mi/AP	VHD veh-h/AP	Total Delay Cost $/AP	Speed mi/h	Density pc/mi/ln	Density veh/mi/ln	TT min	LOS
1	81	58	0.10	2.61	68.7	6.4	6.3	0.30	A

Facility Overall Results

Space Mean Speed, mi/h	68.7	Average Density, veh/mi/ln	6.3
Average Travel Time, min	0.30	Average Density, pc/mi/ln	6.4
Total VMT, veh-mi	81	Total VHD, veh-h	0.10
Vehicle Value of Time (VOT), $/h	25.00	Total Delay Cost, $	2.61

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Route 18 at Middle Street and West Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	179	50	148	197	190	49	992	176	241	765	241
Future Volume (vph)	162	179	50	148	197	190	49	992	176	241	765	241
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1662	3421	1478	1752	3421	1463	1736	3323	1672	1678	3471	1473
Flt Permitted	0.443			0.619			0.950			0.950		
Satd. Flow (perm)	775	3421	1478	1142	3421	1463	1736	3323	1672	1678	3471	1473
Satd. Flow (RTOR)			71			218			71			71
Adj. Flow (vph)	184	203	57	170	226	218	54	1102	196	277	879	277
Lane Group Flow (vph)	184	203	57	170	226	218	54	1102	196	277	879	277
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.0	22.5	22.5	9.5	22.5	22.5
Total Split (s)	21.0	57.0	57.0	21.0	57.0	57.0	14.0	47.0	47.0	14.0	47.0	47.0
Total Split (%)	12.4%	33.7%	33.7%	12.4%	33.7%	33.7%	8.3%	27.8%	27.8%	8.3%	27.8%	27.8%
Maximum Green (s)	18.0	51.0	51.0	18.0	51.0	51.0	11.0	41.0	41.0	11.0	41.0	41.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.0	3.0	0.0	3.0	3.0	0.0	2.0	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.51	0.38	0.20	0.44	0.46	0.55	0.38	0.78	0.26	1.51	0.53	0.38
Control Delay	33.6	42.9	9.3	31.6	45.6	11.9	57.0	32.3	15.9	290.6	24.9	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	42.9	9.3	31.6	45.6	11.9	57.0	32.3	15.9	290.6	24.9	18.9
Queue Length 50th (ft)	83	58	0	76	67	0	32	284	44	~232	192	75
Queue Length 95th (ft)	191	124	27	173	135	65	92	#700	152	#545	438	232
Internal Link Dist (ft)		217			401			322			2793	
Turn Bay Length (ft)	70		70	130		300	115		100	340		65
Base Capacity (vph)	403	1800	811	466	1800	873	189	1419	754	183	1646	736
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.11	0.07	0.36	0.13	0.25	0.29	0.78	0.26	1.51	0.53	0.38

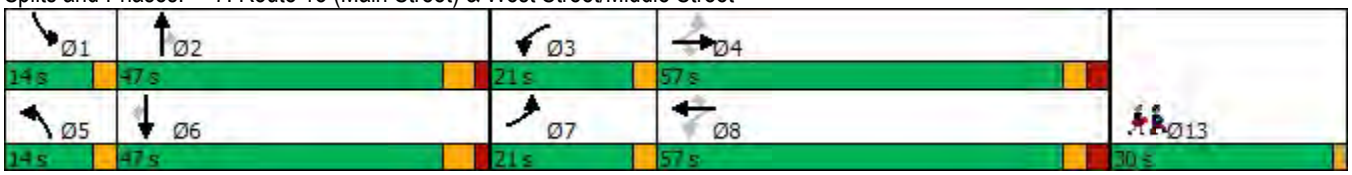
Intersection Summary
Cycle Length: 169

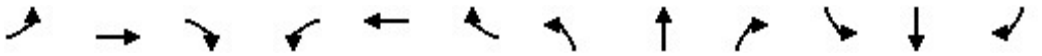
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	30.0
Total Split (s)	30.0
Total Split (%)	18%
Maximum Green (s)	28.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	5
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 103.1
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
~ 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: 7: Route 18 (Main Street) & West Street/Middle Street

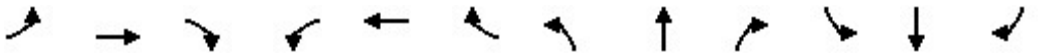




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	179	50	148	197	190	49	992	176	241	765	241
Future Volume (vph)	162	179	50	148	197	190	49	992	176	241	765	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	10	12	11	10	12	11	14	11	12	11
Total Lost time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1662	3421	1478	1752	3421	1463	1736	3323	1672	1678	3471	1473
Flt Permitted	0.44	1.00	1.00	0.62	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	776	3421	1478	1142	3421	1463	1736	3323	1672	1678	3471	1473
Peak-hour factor, PHF	0.88	0.88	0.88	0.87	0.87	0.87	0.90	0.90	0.90	0.87	0.87	0.87
Adj. Flow (vph)	184	203	57	170	226	218	54	1102	196	277	879	277
RTOR Reduction (vph)	0	0	48	0	0	187	0	0	41	0	0	38
Lane Group Flow (vph)	184	203	9	170	226	31	54	1102	155	277	879	239
Heavy Vehicles (%)	5%	2%	2%	3%	2%	3%	4%	5%	3%	4%	4%	6%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	28.4	14.2	14.2	25.4	12.7	12.7	7.1	42.6	42.6	11.3	46.8	46.8
Effective Green, g (s)	28.4	16.2	16.2	25.4	14.7	14.7	7.1	44.6	44.6	11.3	48.8	48.8
Actuated g/C Ratio	0.27	0.15	0.15	0.24	0.14	0.14	0.07	0.42	0.42	0.11	0.46	0.46
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	329	527	228	350	478	204	117	1411	710	180	1613	684
v/s Ratio Prot	c0.08	0.06		0.06	0.07		0.03	c0.33		c0.17	0.25	
v/s Ratio Perm	c0.08		0.01	0.06		0.02			0.09			0.16
v/c Ratio	0.56	0.39	0.04	0.49	0.47	0.15	0.46	0.78	0.22	1.54	0.54	0.35
Uniform Delay, d1	31.5	39.9	37.8	33.4	41.6	39.7	47.1	26.0	19.1	46.9	20.1	18.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.5	0.1	1.1	0.7	0.3	2.9	2.9	0.2	268.3	0.4	0.3
Delay (s)	33.6	40.4	37.8	34.5	42.3	40.0	50.0	28.9	19.3	315.2	20.5	18.3
Level of Service	C	D	D	C	D	D	D	C	B	F	C	B
Approach Delay (s)		37.2			39.3			28.3			77.0	
Approach LOS		D			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	49.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	216	239	86	190	244	206	56	857	191	235	1088	194
Future Volume (vph)	216	239	86	190	244	206	56	857	191	235	1088	194
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1728	3455	1507	1770	3455	1492	1805	3455	1706	1711	3539	1531
Flt Permitted	0.381			0.518			0.950			0.950		
Satd. Flow (perm)	693	3455	1507	965	3455	1492	1805	3455	1706	1711	3539	1531
Satd. Flow (RTOR)			81			237			71			71
Adj. Flow (vph)	227	252	91	218	280	237	62	942	210	255	1183	211
Lane Group Flow (vph)	227	252	91	218	280	237	62	942	210	255	1183	211
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.0	22.5	22.5	9.5	22.5	22.5
Total Split (s)	21.0	57.0	57.0	21.0	57.0	57.0	14.0	47.0	47.0	14.0	47.0	47.0
Total Split (%)	12.4%	33.7%	33.7%	12.4%	33.7%	33.7%	8.3%	27.8%	27.8%	8.3%	27.8%	27.8%
Maximum Green (s)	18.0	51.0	51.0	18.0	51.0	51.0	11.0	41.0	41.0	11.0	41.0	41.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.0	3.0	0.0	3.0	3.0	0.0	2.0	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.60	0.43	0.28	0.55	0.52	0.55	0.42	0.66	0.28	1.42	0.73	0.29
Control Delay	35.2	43.6	14.4	33.2	46.2	10.9	59.5	30.7	17.6	252.5	30.7	17.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.2	43.6	14.4	33.2	46.2	10.9	59.5	30.7	17.6	252.5	30.7	17.4
Queue Length 50th (ft)	105	75	5	100	87	0	38	245	54	~217	322	53
Queue Length 95th (ft)	238	154	58	218	164	66	105	#546	171	#534	#777	176
Internal Link Dist (ft)		217			401			322			2793	
Turn Bay Length (ft)	70		70	130		300	115		100	340		65
Base Capacity (vph)	411	1756	806	457	1756	875	190	1425	745	180	1612	736
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.14	0.11	0.48	0.16	0.27	0.33	0.66	0.28	1.42	0.73	0.29

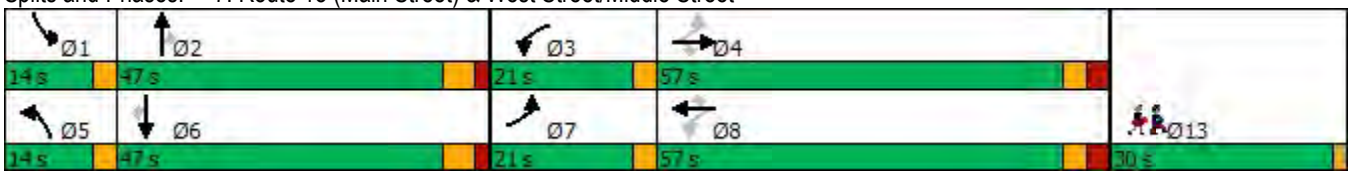
Intersection Summary
Cycle Length: 169

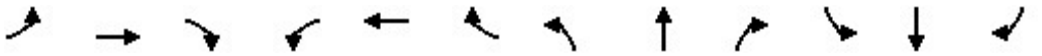
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	30.0
Total Split (s)	30.0
Total Split (%)	18%
Maximum Green (s)	28.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	5
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 106.6
Natural Cycle: 125
Control Type: Actuated-Uncoordinated
~ 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: 7: Route 18 (Main Street) & West Street/Middle Street

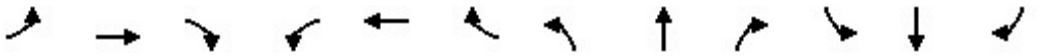




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	216	239	86	190	244	206	56	857	191	235	1088	194
Future Volume (vph)	216	239	86	190	244	206	56	857	191	235	1088	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	10	12	11	10	12	11	14	11	12	11
Total Lost time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1728	3455	1507	1770	3455	1492	1805	3455	1706	1711	3539	1531
Flt Permitted	0.38	1.00	1.00	0.52	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	692	3455	1507	966	3455	1492	1805	3455	1706	1711	3539	1531
Peak-hour factor, PHF	0.95	0.95	0.95	0.87	0.87	0.87	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	227	252	91	218	280	237	62	942	210	255	1183	211
RTOR Reduction (vph)	0	0	68	0	0	201	0	0	42	0	0	39
Lane Group Flow (vph)	227	252	23	218	280	36	62	942	168	255	1183	172
Heavy Vehicles (%)	1%	1%	0%	2%	1%	1%	0%	1%	1%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	31.7	16.0	16.0	29.1	14.7	14.7	7.4	42.7	42.7	11.2	46.5	46.5
Effective Green, g (s)	31.7	18.0	18.0	29.1	16.7	16.7	7.4	44.7	44.7	11.2	48.5	48.5
Actuated g/C Ratio	0.29	0.17	0.17	0.27	0.15	0.15	0.07	0.41	0.41	0.10	0.45	0.45
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	351	572	249	365	531	229	122	1422	702	176	1580	683
v/s Ratio Prot	c0.09	0.07		0.08	0.08		0.03	0.27		c0.15	c0.33	
v/s Ratio Perm	c0.10		0.02	0.08		0.02			0.10			0.11
v/c Ratio	0.65	0.44	0.09	0.60	0.53	0.16	0.51	0.66	0.24	1.45	0.75	0.25
Uniform Delay, d1	31.5	40.8	38.4	33.2	42.3	39.9	48.8	25.8	20.9	48.7	25.0	18.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.1	0.5	0.2	2.6	0.9	0.3	3.3	1.2	0.2	230.9	2.0	0.2
Delay (s)	35.6	41.3	38.6	35.8	43.3	40.2	52.1	27.0	21.0	279.6	27.0	18.9
Level of Service	D	D	D	D	D	D	D	C	C	F	C	B
Approach Delay (s)		38.6			40.1			27.3			65.0	
Approach LOS		D			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	46.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	108.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	186	57	213	183	151	5454	953	186	167	957	153
Future Volume (vph)	146	186	57	213	183	151	5454	953	186	167	957	153
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3455	1478	1770	3421	1492	1805	3455	1706	1728	3574	1487
Flt Permitted	0.627			0.456			0.950			0.950		
Satd. Flow (perm)	1129	3455	1478	849	3421	1492	1805	3455	1706	1728	3574	1487
Satd. Flow (RTOR)			71			164			71			71
Adj. Flow (vph)	152	194	59	232	199	164	6198	1083	211	190	1088	174
Lane Group Flow (vph)	152	194	59	232	199	164	6198	1083	211	190	1088	174
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.0	22.5	22.5	9.5	22.5	22.5
Total Split (s)	21.0	57.0	57.0	21.0	57.0	57.0	14.0	47.0	47.0	14.0	47.0	47.0
Total Split (%)	12.4%	33.7%	33.7%	12.4%	33.7%	33.7%	8.3%	27.8%	27.8%	8.3%	27.8%	27.8%
Maximum Green (s)	18.0	51.0	51.0	18.0	51.0	51.0	11.0	41.0	41.0	11.0	41.0	41.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.0	3.0	0.0	3.0	3.0	0.0	2.0	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.41	0.43	0.23	0.58	0.37	0.44	31.30	0.73	0.27	1.01	0.71	0.26
Control Delay	31.5	45.8	10.6	35.6	43.1	11.2	13661.9	30.3	16.2	114.7	29.6	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	45.8	10.6	35.6	43.1	11.2	13661.9	30.3	16.2	114.7	29.6	14.9
Queue Length 50th (ft)	67	57	0	108	57	0	~7783	270	50	117	268	36
Queue Length 95th (ft)	163	123	32	243	125	67	#10889	#624	158	#364	#610	127
Internal Link Dist (ft)		217			401			322			2793	
Turn Bay Length (ft)	70		70	130		300	115		100	340		65
Base Capacity (vph)	453	1826	815	430	1808	866	198	1482	772	189	1532	678
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.11	0.07	0.54	0.11	0.19	31.30	0.73	0.27	1.01	0.71	0.26

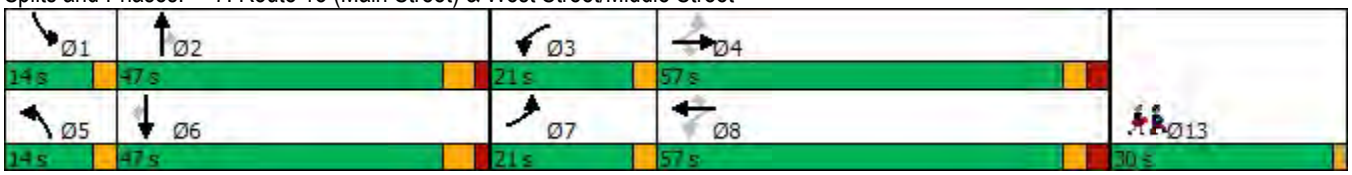
Intersection Summary
Cycle Length: 169

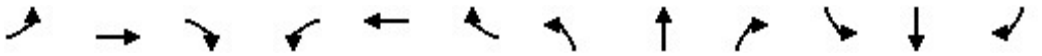
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	30.0
Total Split (s)	30.0
Total Split (%)	18%
Maximum Green (s)	28.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	21.0
Pedestrian Calls (#/hr)	5
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 102.5
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
~ 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: 7: Route 18 (Main Street) & West Street/Middle Street



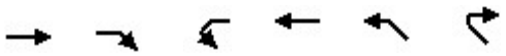


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	186	57	213	183	151	5454	953	186	167	957	153
Future Volume (vph)	146	186	57	213	183	151	5454	953	186	167	957	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	10	12	11	10	12	11	14	11	12	11
Total Lost time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1711	3455	1478	1770	3421	1492	1805	3455	1706	1728	3574	1487
Flt Permitted	0.63	1.00	1.00	0.46	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1129	3455	1478	850	3421	1492	1805	3455	1706	1728	3574	1487
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	152	194	59	232	199	164	6198	1083	211	190	1088	174
RTOR Reduction (vph)	0	0	51	0	0	139	0	0	41	0	0	41
Lane Group Flow (vph)	152	194	8	232	199	25	6198	1083	170	190	1088	133
Heavy Vehicles (%)	2%	1%	2%	2%	2%	1%	0%	1%	1%	1%	1%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	24.0	11.5	11.5	28.8	13.9	13.9	11.2	41.9	41.9	11.2	41.9	41.9
Effective Green, g (s)	24.0	13.5	13.5	28.8	15.9	15.9	11.2	43.9	43.9	11.2	43.9	43.9
Actuated g/C Ratio	0.23	0.13	0.13	0.28	0.15	0.15	0.11	0.42	0.42	0.11	0.42	0.42
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	331	449	192	368	524	228	194	1462	722	186	1513	629
v/s Ratio Prot	0.06	0.06		c0.09	0.06		c3.43	c0.31		0.11	0.30	
v/s Ratio Perm	0.05		0.01	c0.08		0.02			0.10			0.09
v/c Ratio	0.46	0.43	0.04	0.63	0.38	0.11	31.95	0.74	0.24	1.02	0.72	0.21
Uniform Delay, d1	33.6	41.6	39.4	31.2	39.5	37.8	46.2	25.1	19.2	46.2	24.8	18.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.7	0.1	3.5	0.5	0.2	13936.4	2.1	0.2	71.7	1.7	0.2
Delay (s)	34.6	42.2	39.5	34.7	39.9	38.0	13982.6	27.2	19.3	118.0	26.5	19.1
Level of Service	C	D	D	C	D	D	F	C	B	F	C	B
Approach Delay (s)		39.0			37.4			11572.1			37.5	
Approach LOS		D			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	8727.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	4.64		
Actuated Cycle Length (s)	103.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	358.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Grove Street at Plain Street



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	49	427	3	30	804	12
Future Volume (vph)	49	427	3	30	804	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.879				0.998	
Flt Protected				0.995	0.953	
Satd. Flow (prot)	1827	0	0	2080	1755	0
Flt Permitted				0.995	0.953	
Satd. Flow (perm)	1827	0	0	2080	1755	0
Adj. Flow (vph)	54	474	4	36	874	13
Lane Group Flow (vph)	528	0	0	40	887	0
Sign Control	Free			Stop	Free	

Intersection Summary
Control Type: Unsignalized

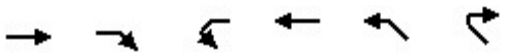
Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	49	427	3	30	804	12
Future Vol, veh/h	49	427	3	30	804	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	83	83	92	92
Heavy Vehicles, %	0	4	0	0	3	0
Mvmt Flow	54	474	4	36	874	13

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	291	528
Stage 1	-	-	0	0
Stage 2	-	-	291	528
Critical Hdwy	-	-	6.4	6.5
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.4	5.5
Follow-up Hdwy	-	-	3.5	4
Pot Cap-1 Maneuver	-	-	704	459
Stage 1	-	-	-	-
Stage 2	-	-	763	531
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	704	0
Mov Cap-2 Maneuver	-	-	704	0
Stage 1	-	-	-	0
Stage 2	-	-	763	0

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

Minor Lane/Major Mvmt	EBT	EBR	WBLn1
Capacity (veh/h)	-	-	704
HCM Lane V/C Ratio	-	-	0.056
HCM Control Delay (s)	-	-	10.4
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.2



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	27	880	8	15	655	14
Future Volume (vph)	27	880	8	15	655	14
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.869				0.997	
Flt Protected				0.982	0.953	
Satd. Flow (prot)	1853	0	0	2052	1805	0
Flt Permitted				0.982	0.953	
Satd. Flow (perm)	1853	0	0	2052	1805	0
Adj. Flow (vph)	28	926	10	18	689	15
Lane Group Flow (vph)	954	0	0	28	704	0
Sign Control	Free			Stop	Free	

Intersection Summary
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	27	880	8	15	655	14
Future Vol, veh/h	27	880	8	15	655	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	82	82	95	95
Heavy Vehicles, %	0	1	0	0	0	1
Mvmt Flow	28	926	10	18	689	15

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	491	954
Stage 1	-	-	0	0
Stage 2	-	-	491	954
Critical Hdwy	-	-	6.4	6.5
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.4	5.5
Follow-up Hdwy	-	-	3.5	4
Pot Cap-1 Maneuver	-	-	540	261
Stage 1	-	-	-	-
Stage 2	-	-	619	340
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	540	0
Mov Cap-2 Maneuver	-	-	540	0
Stage 1	-	-	-	0
Stage 2	-	-	619	0

Approach	EB	WB
HCM Control Delay, s	0	12
HCM LOS		B

Minor Lane/Major Mvmt	EBT	EBR	WBLn1
Capacity (veh/h)	-	-	540
HCM Lane V/C Ratio	-	-	0.052
HCM Control Delay (s)	-	-	12
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.2



Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	54	888	560	25	17	34
Future Volume (vph)	54	888	560	25	17	34
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994		0.910	
Flt Protected		0.997			0.984	
Satd. Flow (prot)	0	2127	1871	0	1871	0
Flt Permitted		0.997			0.984	
Satd. Flow (perm)	0	2127	1871	0	1871	0
Adj. Flow (vph)	56	915	629	28	20	40
Lane Group Flow (vph)	0	971	657	0	60	0
Sign Control		Free	Free		Stop	

Intersection Summary
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	1.4

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	54	888	560	25	17	34
Future Vol, veh/h	54	888	560	25	17	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	89	89	85	85
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	56	915	629	28	20	40

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	657	0	-	0	1670	643
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	1027	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	940	-	-	-	107	477
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	348	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	940	-	-	-	94	477
Mov Cap-2 Maneuver	-	-	-	-	94	-
Stage 1	-	-	-	-	463	-
Stage 2	-	-	-	-	348	-

Approach	SE	NW	SW
HCM Control Delay, s	0.5	0	30.2
HCM LOS			D

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	940	-	202
HCM Lane V/C Ratio	-	-	0.059	-	0.297
HCM Control Delay (s)	-	-	9.1	0	30.2
HCM Lane LOS	-	-	A	A	D
HCM 95th %tile Q(veh)	-	-	0.2	-	1.2

Grove Street at Liberty Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	24	300	108	126	527	131	193	326	206	156	221	26
Future Volume (vph)	24	300	108	126	527	131	193	326	206	156	221	26
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.962			0.975			0.957			0.990	
Flt Protected		0.997			0.992			0.987			0.981	
Satd. Flow (prot)	0	3308	0	0	3288	0	0	3328	0	0	3368	0
Flt Permitted		0.884			0.760			0.673			0.533	
Satd. Flow (perm)	0	2933	0	0	2519	0	0	2269	0	0	1830	0
Satd. Flow (RTOR)		34			20			42			6	
Adj. Flow (vph)	26	330	119	137	573	142	208	351	222	181	257	30
Lane Group Flow (vph)	0	475	0	0	852	0	0	781	0	0	468	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases		2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		9.5	22.5		22.5	22.5		9.5	22.5	
Total Split (s)	43.0	43.0		13.0	56.0		38.0	38.0		13.0	51.0	
Total Split (%)	31.9%	31.9%		9.6%	41.5%		28.1%	28.1%		9.6%	37.8%	
Maximum Green (s)	37.0	37.0		10.0	50.0		32.0	32.0		10.0	45.0	
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		0.0	2.0		2.0	2.0		0.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0			-2.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.32			0.66			0.83			0.98dl	
Control Delay		12.2			18.5			33.1			26.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		12.2			18.5			33.1			26.8	
Queue Length 50th (ft)		68			164			199			110	
Queue Length 95th (ft)		110			254			#333			168	
Internal Link Dist (ft)		725			1006			541			823	
Turn Bay Length (ft)												
Base Capacity (vph)		1545			1519			937			995	
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		0.31			0.56			0.83			0.47	

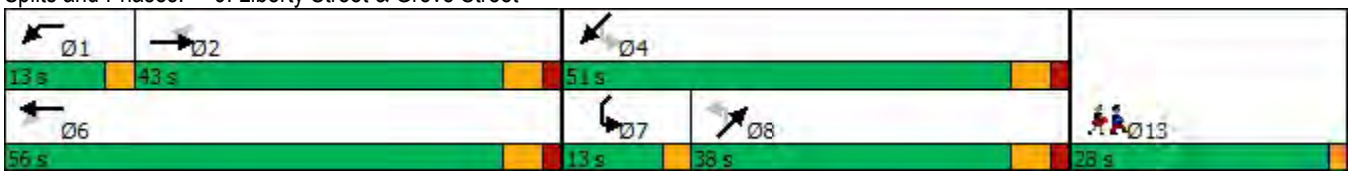
Intersection Summary
Cycle Length: 135

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	28.0
Total Split (s)	28.0
Total Split (%)	21%
Maximum Green (s)	26.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	19.0
Pedestrian Calls (#/hr)	0
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 87.5
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 9: Liberty Street & Grove Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	24	300	108	126	527	131	193	326	206	156	221	26
Future Volume (vph)	24	300	108	126	527	131	193	326	206	156	221	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	12	12	10
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.96			0.97			0.96			0.99	
Flt Protected		1.00			0.99			0.99			0.98	
Satd. Flow (prot)		3310			3288			3329			3370	
Flt Permitted		0.88			0.76			0.67			0.53	
Satd. Flow (perm)		2935			2518			2269			1832	
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.93	0.93	0.93	0.86	0.86	0.86
Adj. Flow (vph)	26	330	119	137	573	142	208	351	222	181	257	30
RTOR Reduction (vph)	0	17	0	0	10	0	0	25	0	0	4	0
Lane Group Flow (vph)	0	458	0	0	842	0	0	756	0	0	464	0
Heavy Vehicles (%)	0%	6%	2%	3%	3%	1%	2%	3%	2%	1%	5%	15%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases		2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		42.2			42.2			33.2			33.2	
Effective Green, g (s)		44.2			44.2			35.2			35.2	
Actuated g/C Ratio		0.51			0.51			0.40			0.40	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1484			1273			913			737	
v/s Ratio Prot												
v/s Ratio Perm		0.16			c0.33			c0.33			0.25	
v/c Ratio		0.31			0.66			0.83			0.98dl	
Uniform Delay, d1		12.7			16.0			23.4			20.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.1			1.3			6.3			1.8	
Delay (s)		12.8			17.3			29.6			22.7	
Level of Service		B			B			C			C	
Approach Delay (s)		12.8			17.3			29.6			22.7	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	87.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	31	668	170	195	527	148	128	239	198	247	398	23
Future Volume (vph)	31	668	170	195	527	148	128	239	198	247	398	23
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.971			0.975			0.947			0.995	
Flt Protected		0.998			0.989			0.989			0.982	
Satd. Flow (prot)	0	3465	0	0	3337	0	0	3381	0	0	3527	0
Flt Permitted		0.864			0.530			0.578			0.561	
Satd. Flow (perm)	0	3000	0	0	1788	0	0	1976	0	0	2015	0
Satd. Flow (RTOR)		22			21			71			3	
Adj. Flow (vph)	34	742	189	210	567	159	149	278	230	268	433	25
Lane Group Flow (vph)	0	965	0	0	936	0	0	657	0	0	726	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases		2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		9.5	22.5		22.5	22.5		9.5	22.5	
Total Split (s)	43.0	43.0		13.0	56.0		38.0	38.0		13.0	51.0	
Total Split (%)	31.9%	31.9%		9.6%	41.5%		28.1%	28.1%		9.6%	37.8%	
Maximum Green (s)	37.0	37.0		10.0	50.0		32.0	32.0		10.0	45.0	
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		0.0	2.0		2.0	2.0		0.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0			-2.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.67			1.23dl			0.77			1.15dl	
Control Delay		26.9			88.1			33.1			43.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		26.9			88.1			33.1			43.6	
Queue Length 50th (ft)		248			~370			171			223	
Queue Length 95th (ft)		482			#693			#347			#488	
Internal Link Dist (ft)		725			1006			541			823	
Turn Bay Length (ft)												
Base Capacity (vph)		1432			857			855			864	
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		0.67			1.09			0.77			0.84	

Intersection Summary

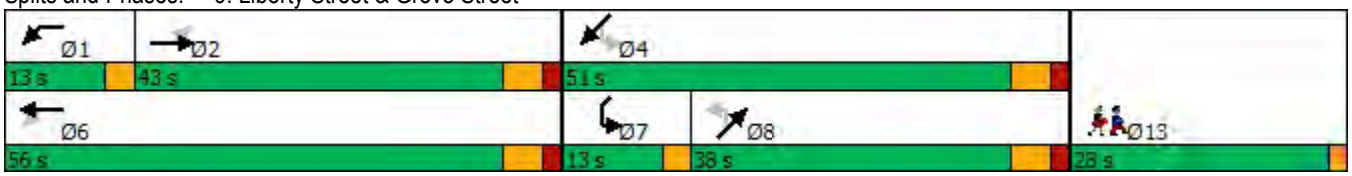
Cycle Length: 135

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	28.0
Total Split (s)	28.0
Total Split (%)	21%
Maximum Green (s)	26.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	19.0
Pedestrian Calls (#/hr)	2
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 111
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
~ 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.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 9: Liberty Street & Grove Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	31	668	170	195	527	148	128	239	198	247	398	23
Future Volume (vph)	31	668	170	195	527	148	128	239	198	247	398	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	12	12	10
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.97			0.97			0.95			0.99	
Flt Protected		1.00			0.99			0.99			0.98	
Satd. Flow (prot)		3464			3335			3382			3526	
Flt Permitted		0.86			0.53			0.58			0.56	
Satd. Flow (perm)		3000			1789			1976			2016	
Peak-hour factor, PHF	0.90	0.90	0.90	0.93	0.93	0.93	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	34	742	189	210	567	159	149	278	230	268	433	25
RTOR Reduction (vph)	0	12	0	0	11	0	0	42	0	0	2	0
Lane Group Flow (vph)	0	953	0	0	925	0	0	615	0	0	724	0
Heavy Vehicles (%)	0%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases		2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		50.6			50.6			43.7			43.7	
Effective Green, g (s)		52.6			52.6			45.7			45.7	
Actuated g/C Ratio		0.47			0.47			0.41			0.41	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1401			835			801			818	
v/s Ratio Prot												
v/s Ratio Perm		0.32			c0.52			0.31			c0.36	
v/c Ratio		0.68			1.23dl			0.77			1.15dl	
Uniform Delay, d1		23.4			30.0			28.9			31.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.4			64.9			4.4			11.3	
Delay (s)		24.8			94.9			33.3			42.3	
Level of Service		C			F			C			D	
Approach Delay (s)		24.8			94.9			33.3			42.3	
Approach LOS		C			F			C			D	

Intersection Summary			
HCM 2000 Control Delay	50.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	112.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.7%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	54	408	358	209	482	136	140	248	155	204	368	30
Future Volume (vph)	54	408	358	209	482	136	140	248	155	204	368	30
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.935			0.975			0.957			0.993	
Flt Protected		0.997			0.988			0.987			0.983	
Satd. Flow (prot)	0	3349	0	0	3356	0	0	3385	0	0	3491	0
Flt Permitted		0.743			0.542			0.577			0.565	
Satd. Flow (perm)	0	2495	0	0	1841	0	0	1979	0	0	2006	0
Satd. Flow (RTOR)		146			20			42			4	
Adj. Flow (vph)	59	443	389	240	554	156	171	302	189	234	423	34
Lane Group Flow (vph)	0	891	0	0	950	0	0	662	0	0	691	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases		2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		8	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		9.5	22.5		22.5	22.5		9.5	22.5	
Total Split (s)	43.0	43.0		13.0	56.0		38.0	38.0		13.0	51.0	
Total Split (%)	31.9%	31.9%		9.6%	41.5%		28.1%	28.1%		9.6%	37.8%	
Maximum Green (s)	37.0	37.0		10.0	50.0		32.0	32.0		10.0	45.0	
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		0.0	2.0		2.0	2.0		0.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0			-2.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.70			1.18dl			0.80			1.05dl	
Control Delay		24.0			77.2			36.6			41.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		24.0			77.2			36.6			41.8	
Queue Length 50th (ft)		202			~371			182			206	
Queue Length 95th (ft)		418			#663			#324			#425	
Internal Link Dist (ft)		725			1006			541			823	
Turn Bay Length (ft)												
Base Capacity (vph)		1274			894			824			873	
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		0.70			1.06			0.80			0.79	

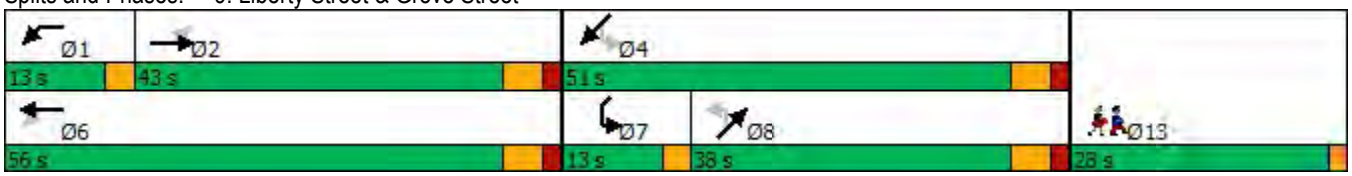
Intersection Summary
Cycle Length: 135

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	28.0
Total Split (s)	28.0
Total Split (%)	21%
Maximum Green (s)	26.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	19.0
Pedestrian Calls (#/hr)	3
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 109.7
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
~ 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.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 9: Liberty Street & Grove Street



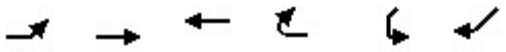
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	54	408	358	209	482	136	140	248	155	204	368	30
Future Volume (vph)	54	408	358	209	482	136	140	248	155	204	368	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	11	12	12	12	12	12	10
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.93			0.98			0.96			0.99	
Flt Protected		1.00			0.99			0.99			0.98	
Satd. Flow (prot)		3346			3356			3386			3491	
Flt Permitted		0.74			0.54			0.58			0.57	
Satd. Flow (perm)		2495			1841			1980			2006	
Peak-hour factor, PHF	0.92	0.92	0.92	0.87	0.87	0.87	0.82	0.82	0.82	0.87	0.87	0.87
Adj. Flow (vph)	59	443	389	240	554	156	171	302	189	234	423	34
RTOR Reduction (vph)	0	77	0	0	11	0	0	25	0	0	2	0
Lane Group Flow (vph)	0	814	0	0	939	0	0	637	0	0	689	0
Heavy Vehicles (%)	0%	1%	0%	0%	0%	1%	0%	1%	1%	1%	1%	0%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		pm+pt	NA	
Protected Phases		2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		50.7			50.7			42.3			42.3	
Effective Green, g (s)		52.7			52.7			44.3			44.3	
Actuated g/C Ratio		0.47			0.47			0.40			0.40	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1182			872			788			799	
v/s Ratio Prot												
v/s Ratio Perm		0.33			c0.51			0.32			c0.34	
v/c Ratio		0.69			1.18dl			0.81			1.05dl	
Uniform Delay, d1		22.8			29.2			29.7			30.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.7			53.5			6.1			9.5	
Delay (s)		24.5			82.8			35.8			40.1	
Level of Service		C			F			D			D	
Approach Delay (s)		24.5			82.8			35.8			40.1	
Approach LOS		C			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	47.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	111.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Grove Street at Columbian Street

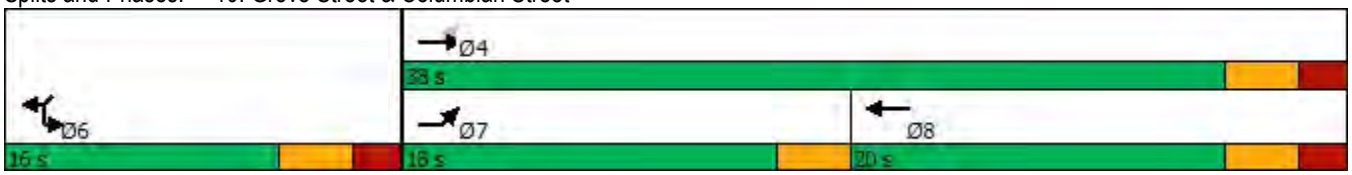


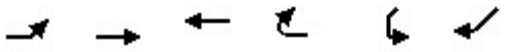
Lane Group	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	301	355	482	262	197	285
Future Volume (vph)	301	355	482	262	197	285
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt			0.947			0.850
Flt Protected		0.978			0.950	
Satd. Flow (prot)	0	3294	3240	0	2006	1583
Flt Permitted		0.566			0.950	
Satd. Flow (perm)	0	1906	3240	0	2006	1583
Satd. Flow (RTOR)			192			331
Adj. Flow (vph)	350	413	581	316	229	331
Lane Group Flow (vph)	0	763	897	0	229	331
Turn Type	pm+pt	NA	NA		Prot	Prot
Protected Phases	7	4	8		6	6
Permitted Phases	4					
Detector Phase	7	4	8		6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	9.5	10.0	10.0		10.0	10.0
Total Split (s)	18.0	38.0	20.0		16.0	16.0
Total Split (%)	33.3%	70.4%	37.0%		29.6%	29.6%
Maximum Green (s)	15.0	33.0	15.0		11.0	11.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	0.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0	-1.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		None	None
v/c Ratio		1.26dl	0.48		0.46	0.51
Control Delay		11.9	5.2		18.5	5.9
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		11.9	5.2		18.5	5.9
Queue Length 50th (ft)		59	42		44	0
Queue Length 95th (ft)		102	62		114	46
Internal Link Dist (ft)		175	475		574	
Turn Bay Length (ft)						180
Base Capacity (vph)		1575	1912		611	712
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		0.48	0.47		0.37	0.46

Intersection Summary
Cycle Length: 54
Actuated Cycle Length: 41.3
Natural Cycle: 40
Control Type: Actuated-Uncoordinated

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 10: Grove Street & Columbian Street



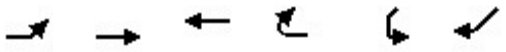


Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	301	355	482	262	197	285
Future Volume (vph)	301	355	482	262	197	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	14	16	12
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		0.98	1.00		0.95	1.00
Satd. Flow (prot)		3292	3240		2006	1583
Flt Permitted		0.57	1.00		0.95	1.00
Satd. Flow (perm)		1907	3240		2006	1583
Peak-hour factor, PHF	0.86	0.86	0.83	0.83	0.86	0.86
Adj. Flow (vph)	350	413	581	316	229	331
RTOR Reduction (vph)	0	0	86	0	0	247
Lane Group Flow (vph)	0	763	811	0	229	84
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%
Turn Type	pm+pt	NA	NA		Prot	Prot
Protected Phases	7	4	8		6	6
Permitted Phases	4					
Actuated Green, G (s)		21.5	21.5		9.3	9.3
Effective Green, g (s)		22.5	22.5		10.3	10.3
Actuated g/C Ratio		0.55	0.55		0.25	0.25
Clearance Time (s)		5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1051	1786		506	399
v/s Ratio Prot			0.25		c0.11	0.05
v/s Ratio Perm		c0.40				
v/c Ratio		1.26dl	0.45		0.45	0.21
Uniform Delay, d1		6.8	5.5		12.9	12.0
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		2.5	0.2		0.6	0.3
Delay (s)		9.4	5.7		13.5	12.3
Level of Service		A	A		B	B
Approach Delay (s)		9.4	5.7		12.8	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	40.8	Sum of lost time (s)	11.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

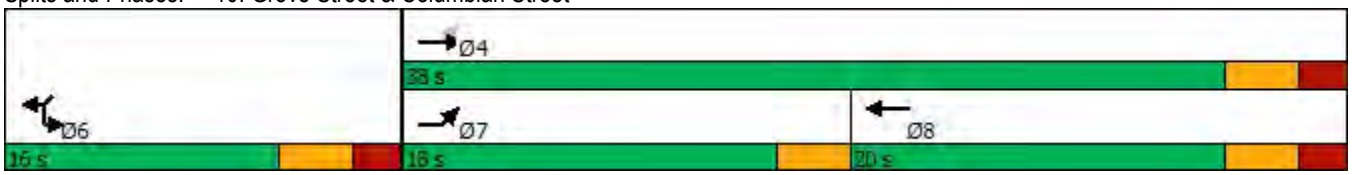


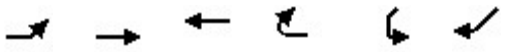
Lane Group	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	350	71	520	246	299	382
Future Volume (vph)	350	71	520	246	299	382
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt			0.952			0.850
Flt Protected		0.960			0.950	
Satd. Flow (prot)	0	3322	3322	0	2046	1599
Flt Permitted		0.684			0.950	
Satd. Flow (perm)	0	2367	3322	0	2046	1599
Satd. Flow (RTOR)			149			382
Adj. Flow (vph)	376	76	591	280	299	382
Lane Group Flow (vph)	0	452	871	0	299	382
Turn Type	pm+pt	NA	NA		Prot	Prot
Protected Phases	7	4	8		6	6
Permitted Phases	4					
Detector Phase	7	4	8		6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	9.5	10.0	10.0		10.0	10.0
Total Split (s)	18.0	38.0	20.0		16.0	16.0
Total Split (%)	33.3%	70.4%	37.0%		29.6%	29.6%
Maximum Green (s)	15.0	33.0	15.0		11.0	11.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	0.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0	-1.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		None	None
v/c Ratio		1.72dl	0.56		0.46	0.50
Control Delay		8.1	7.4		12.4	4.1
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		8.1	7.4		12.4	4.1
Queue Length 50th (ft)		27	45		44	0
Queue Length 95th (ft)		51	76		93	38
Internal Link Dist (ft)		175	475		574	
Turn Bay Length (ft)						180
Base Capacity (vph)		2276	1703		737	820
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		0.20	0.51		0.41	0.47

Intersection Summary
Cycle Length: 54
Actuated Cycle Length: 33.7
Natural Cycle: 45
Control Type: Actuated-Uncoordinated

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 10: Grove Street & Columbian Street



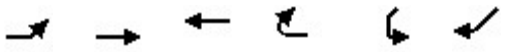


Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	350	71	520	246	299	382
Future Volume (vph)	350	71	520	246	299	382
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	14	16	12
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		0.96	1.00		0.95	1.00
Satd. Flow (prot)		3323	3321		2046	1599
Flt Permitted		0.68	1.00		0.95	1.00
Satd. Flow (perm)		2366	3321		2046	1599
Peak-hour factor, PHF	0.93	0.93	0.88	0.88	1.00	1.00
Adj. Flow (vph)	376	76	591	280	299	382
RTOR Reduction (vph)	0	0	83	0	0	260
Lane Group Flow (vph)	0	452	788	0	299	122
Heavy Vehicles (%)	1%	0%	0%	0%	0%	1%
Turn Type	pm+pt	NA	NA		Prot	Prot
Protected Phases	7	4	8		6	6
Permitted Phases	4					
Actuated Green, G (s)		13.9	13.9		9.7	9.7
Effective Green, g (s)		14.9	14.9		10.7	10.7
Actuated g/C Ratio		0.44	0.44		0.32	0.32
Clearance Time (s)		5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1049	1472		651	509
v/s Ratio Prot			c0.24		c0.15	0.08
v/s Ratio Perm		0.19				
v/c Ratio		1.72dl	0.54		0.46	0.24
Uniform Delay, d1		6.4	6.8		9.1	8.4
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.3	0.4		0.5	0.2
Delay (s)		6.7	7.2		9.7	8.7
Level of Service		A	A		A	A
Approach Delay (s)		6.7	7.2		9.1	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	33.6	Sum of lost time (s)	11.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

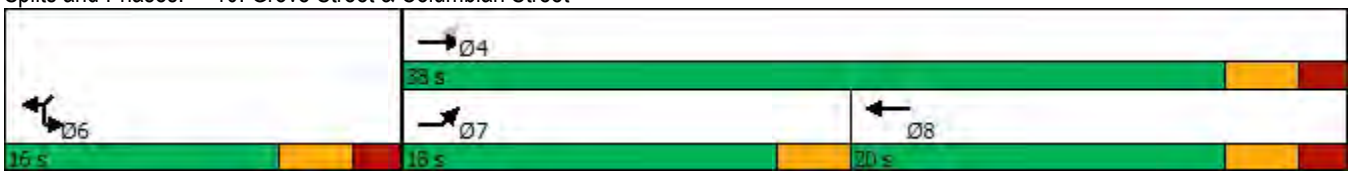
c Critical Lane Group

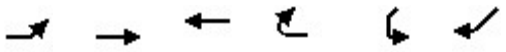


Lane Group	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	264	562	413	212	229	301
Future Volume (vph)	264	562	413	212	229	301
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt			0.949			0.850
Flt Protected		0.984			0.950	
Satd. Flow (prot)	0	3389	3279	0	2046	1599
Flt Permitted		0.629			0.950	
Satd. Flow (perm)	0	2166	3279	0	2046	1599
Satd. Flow (RTOR)			171			324
Adj. Flow (vph)	297	631	454	233	246	324
Lane Group Flow (vph)	0	928	687	0	246	324
Turn Type	pm+pt	NA	NA		Prot	Prot
Protected Phases	7	4	8		6	6
Permitted Phases	4					
Detector Phase	7	4	8		6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	9.5	10.0	10.0		10.0	10.0
Total Split (s)	18.0	38.0	20.0		16.0	16.0
Total Split (%)	33.3%	70.4%	37.0%		29.6%	29.6%
Maximum Green (s)	15.0	33.0	15.0		11.0	11.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	0.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0	-1.0
Total Lost Time (s)		4.0	4.0		4.0	4.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		None	None
v/c Ratio		0.72	0.34		0.52	0.53
Control Delay		10.6	3.9		22.1	6.3
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		10.6	3.9		22.1	6.3
Queue Length 50th (ft)		83	31		65	0
Queue Length 95th (ft)		135	51		129	52
Internal Link Dist (ft)		175	475		574	
Turn Bay Length (ft)						180
Base Capacity (vph)		1609	2011		544	663
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		0.58	0.34		0.45	0.49

Intersection Summary
Cycle Length: 54
Actuated Cycle Length: 46.9
Natural Cycle: 50
Control Type: Actuated-Uncoordinated

Splits and Phases: 10: Grove Street & Columbian Street





Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	264	562	413	212	229	301
Future Volume (vph)	264	562	413	212	229	301
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	14	16	12
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.95		1.00	0.85
Flt Protected		0.98	1.00		0.95	1.00
Satd. Flow (prot)		3390	3279		2046	1599
Flt Permitted		0.63	1.00		0.95	1.00
Satd. Flow (perm)		2166	3279		2046	1599
Peak-hour factor, PHF	0.89	0.89	0.91	0.91	0.93	0.93
Adj. Flow (vph)	297	631	454	233	246	324
RTOR Reduction (vph)	0	0	69	0	0	249
Lane Group Flow (vph)	0	928	618	0	246	75
Heavy Vehicles (%)	2%	1%	1%	1%	0%	1%
Turn Type	pm+pt	NA	NA		Prot	Prot
Protected Phases	7	4	8		6	6
Permitted Phases	4					
Actuated Green, G (s)		26.7	26.7		9.8	9.8
Effective Green, g (s)		27.7	27.7		10.8	10.8
Actuated g/C Ratio		0.60	0.60		0.23	0.23
Clearance Time (s)		5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1290	1953		475	371
v/s Ratio Prot			0.19		c0.12	0.05
v/s Ratio Perm		c0.43				
v/c Ratio		0.72	0.32		0.52	0.20
Uniform Delay, d1		6.7	4.7		15.6	14.4
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		2.0	0.1		1.0	0.3
Delay (s)		8.6	4.8		16.5	14.7
Level of Service		A	A		B	B
Approach Delay (s)		8.6	4.8		15.5	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	46.5	Sum of lost time (s)	11.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Columbian Street at Forest Street

Intersection	
Int Delay, s/veh	109.6

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	229	1	80	0	0	0	1	361	132	2	589	33
Future Vol, veh/h	229	1	80	0	0	0	1	361	132	2	589	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	25	25	25	79	79	79	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	3	3	0	2	0
Mvmt Flow	260	1	91	0	0	0	1	457	167	3	736	41

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	1306	1326	541	1352	1389	757	777	0	0	624	0	0
Stage 1	543	543	-	763	763	-	-	-	-	-	-	-
Stage 2	763	783	-	589	626	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 138	157	545	128	144	411	848	-	-	967	-	-
Stage 1	528	523	-	400	416	-	-	-	-	-	-	-
Stage 2	400	407	-	498	480	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 137	156	545	105	143	411	848	-	-	967	-	-
Mov Cap-2 Maneuver	~ 137	156	-	105	143	-	-	-	-	-	-	-
Stage 1	527	522	-	399	414	-	-	-	-	-	-	-
Stage 2	398	405	-	413	479	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	$ 546.6	0	0	0
HCM LOS	F	A		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	170	967	-	-	848	-	-	-
HCM Lane V/C Ratio	2.072	0.003	-	-	0.001	-	-	-
HCM Control Delay (s)	$ 546.6	8.7	0	-	9.3	0	-	0
HCM Lane LOS	F	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	27.6	0	-	-	0	-	-	-

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

Intersection	
Int Delay, s/veh	147.5

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	150	0	73	2	0	0	1	669	331	88	529	4
Future Vol, veh/h	150	0	73	2	0	0	1	669	331	88	529	4
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	82	82	82	50	50	50	97	97	97	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	1	0	0
Mvmt Flow	183	0	89	4	0	0	1	690	341	102	615	5

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	1685	1687	861	1729	1855	618	620	0	0	1031	0	0
Stage 1	863	863	-	822	822	-	-	-	-	-	-	-
Stage 2	822	824	-	907	1033	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.209	-	-
Pot Cap-1 Maneuver	~ 75	95	358	70	75	493	970	-	-	678	-	-
Stage 1	352	374	-	371	391	-	-	-	-	-	-	-
Stage 2	371	390	-	333	312	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 62	73	358	43	58	493	970	-	-	678	-	-
Mov Cap-2 Maneuver	~ 62	73	-	43	58	-	-	-	-	-	-	-
Stage 1	351	373	-	370	301	-	-	-	-	-	-	-
Stage 2	286	300	-	249	311	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, $	1095.3	97.1	0	1.6
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	85	678	-	-	970	-	-	43
HCM Lane V/C Ratio	3.199	0.151	-	-	0.001	-	-	0.093
HCM Control Delay (s)	$ 1095.3	11.3	0	-	8.7	0	-	97.1
HCM Lane LOS	F	B	A	-	A	A	-	F
HCM 95th %tile Q(veh)	27.1	0.5	-	-	0	-	-	0.3

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

Intersection	
Int Delay, s/veh	20.7

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	122	2	58	1	0	1	0	553	180	56	455	1
Future Vol, veh/h	122	2	58	1	0	1	0	553	180	56	455	1
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	95	95	95	25	25	25	93	93	93	97	97	97
Heavy Vehicles, %	1	0	0	1	0	1	0	1	0	0	1	0
Mvmt Flow	128	2	61	4	0	4	0	595	194	58	469	1

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	1280	1278	692	1310	1375	470	470	0	0	789	0	0
Stage 1	692	692	-	586	586	-	-	-	-	-	-	-
Stage 2	588	586	-	724	789	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.5	6.2	7.11	6.5	6.21	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.11	5.5	-	6.11	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.5	-	6.11	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4	3.3	3.509	4	3.309	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	143	168	447	137	147	596	1102	-	-	840	-	-
Stage 1	436	448	-	498	500	-	-	-	-	-	-	-
Stage 2	497	500	-	419	405	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	132	152	447	109	133	596	1102	-	-	840	-	-
Mov Cap-2 Maneuver	132	152	-	109	133	-	-	-	-	-	-	-
Stage 1	436	448	-	498	454	-	-	-	-	-	-	-
Stage 2	448	454	-	360	405	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	159.7	25.5	0	1.1
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	171	840	-	-	1102	-	-	184
HCM Lane V/C Ratio	1.12	0.069	-	-	-	-	-	0.043
HCM Control Delay (s)	159.7	9.6	0	-	0	-	-	25.5
HCM Lane LOS	F	A	A	-	A	-	-	D
HCM 95th %tile Q(veh)	9.9	0.2	-	-	0	-	-	0.1

Columbian Street at Park Avenue West

Intersection	
Int Delay, s/veh	24.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	8	266	184	1	349	5	239	2	1	3	0	1
Future Vol, veh/h	8	266	184	1	349	5	239	2	1	3	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	88	88	88	82	82	82	82	82	82
Heavy Vehicles, %	0	1	3	0	1	0	0	4	1	2	5	4
Mvmt Flow	9	313	216	1	397	6	291	2	1	4	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	403	0	0	529	0	0	842	844	421	843	949	400
Stage 1	-	-	-	-	-	-	439	439	-	402	402	-
Stage 2	-	-	-	-	-	-	403	405	-	441	547	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.54	6.21	7.12	6.55	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-	6.12	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-	6.12	5.55	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.036	3.309	3.518	4.045	3.336
Pot Cap-1 Maneuver	1167	-	-	1048	-	-	~ 286	298	635	284	257	646
Stage 1	-	-	-	-	-	-	601	575	-	625	595	-
Stage 2	-	-	-	-	-	-	628	595	-	595	513	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1167	-	-	1048	-	-	~ 283	294	635	279	254	646
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 283	294	-	279	254	-
Stage 1	-	-	-	-	-	-	594	569	-	618	594	-
Stage 2	-	-	-	-	-	-	626	594	-	585	507	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	104	16.2
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	284	1167	-	-	1048	-	-	325
HCM Lane V/C Ratio	1.039	0.008	-	-	0.001	-	-	0.015
HCM Control Delay (s)	104	8.1	0	-	8.4	0	-	16.2
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	11.2	0	-	-	0	-	-	0

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

Intersection	
Int Delay, s/veh	48.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	4	371	352	0	365	8	261	1	3	3	1	5
Future Vol, veh/h	4	371	352	0	365	8	261	1	3	3	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	94	94	94	87	87	87	75	75	75
Heavy Vehicles, %	0	1	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	4	403	383	0	388	9	300	1	3	4	1	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	397	0	0	786	0	0	1000	1000	595	998	1187	393
Stage 1	-	-	-	-	-	-	603	603	-	393	393	-
Stage 2	-	-	-	-	-	-	397	397	-	605	794	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1173	-	-	842	-	-	~ 224	245	508	224	190	660
Stage 1	-	-	-	-	-	-	489	492	-	636	609	-
Stage 2	-	-	-	-	-	-	633	607	-	488	403	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1173	-	-	842	-	-	~ 219	243	508	220	189	660
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 219	243	-	220	189	-
Stage 1	-	-	-	-	-	-	486	489	-	632	609	-
Stage 2	-	-	-	-	-	-	625	607	-	480	400	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	238.1	16
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	221	1173	-	-	842	-	-	340
HCM Lane V/C Ratio	1.378	0.004	-	-	-	-	-	0.035
HCM Control Delay (s)	238.1	8.1	0	-	0	-	-	16
HCM Lane LOS	F	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	17.1	0	-	-	0	-	-	0.1

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

Intersection	
Int Delay, s/veh	11.3

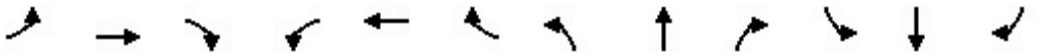
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	369	261	0	313	5	194	4	4	7	2	3
Future Vol, veh/h	6	369	261	0	313	5	194	4	4	7	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	92	92	92	90	90	90	75	75	75
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	6	384	272	0	340	5	216	4	4	9	3	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	345	0	0	656	0	0	878	877	520	879	1011	343
Stage 1	-	-	-	-	-	-	532	532	-	343	343	-
Stage 2	-	-	-	-	-	-	346	345	-	536	668	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1225	-	-	941	-	-	271	289	560	270	241	704
Stage 1	-	-	-	-	-	-	535	529	-	676	641	-
Stage 2	-	-	-	-	-	-	674	640	-	532	459	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1225	-	-	941	-	-	266	287	560	263	239	704
Mov Cap-2 Maneuver	-	-	-	-	-	-	266	287	-	263	239	-
Stage 1	-	-	-	-	-	-	531	525	-	671	641	-
Stage 2	-	-	-	-	-	-	667	640	-	519	455	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	61.2	17.4
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	269	1225	-	-	941	-	-	306
HCM Lane V/C Ratio	0.834	0.005	-	-	-	-	-	0.052
HCM Control Delay (s)	61.2	8	0	-	0	-	-	17.4
HCM Lane LOS	F	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	6.8	0	-	-	0	-	-	0.2

Route 18 at Park Avenue and Park Avenue West



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	272	46	73	255	271	90	918	40	230	553	32
Future Volume (vph)	103	272	46	73	255	271	90	918	40	230	553	32
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.978				0.850		0.994			0.992	
Flt Protected	0.950			0.950	0.999		0.950			0.950		
Satd. Flow (prot)	1662	3346	0	1609	1708	1568	1736	3420	0	1736	3440	0
Flt Permitted	0.551			0.465	0.992		0.304			0.100		
Satd. Flow (perm)	964	3346	0	788	1696	1568	555	3420	0	183	3440	0
Satd. Flow (RTOR)		12				311		3			5	
Adj. Flow (vph)	117	309	52	84	293	311	100	1020	44	264	636	37
Lane Group Flow (vph)	117	361	0	76	301	311	100	1064	0	264	673	0
Turn Type	pm+pt	NA		pm+pt	NA	Over	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	11.0		9.0	11.0	10.0	9.0	11.0		10.0	11.0	
Total Split (s)	14.0	33.0		14.0	33.0	14.0	14.0	53.0		14.0	53.0	
Total Split (%)	10.0%	23.6%		10.0%	23.6%	10.0%	10.0%	37.9%		10.0%	37.9%	
Maximum Green (s)	10.0	27.0		10.0	27.0	10.0	10.0	47.0		10.0	47.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0	0.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	-2.0		0.0	-2.0	0.0	0.0	-2.0		0.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.32	0.46		0.26	0.67	0.71	0.27	0.77		1.03	0.47	
Control Delay	30.4	37.8		30.1	40.9	15.5	15.7	31.9		90.2	23.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	30.4	37.8		30.1	40.9	15.5	15.7	31.9		90.2	23.9	
Queue Length 50th (ft)	49	97		32	150	0	24	261		103	136	
Queue Length 95th (ft)	129	197		93	333	83	90	#577		#422	307	
Internal Link Dist (ft)		344			343			987			2915	
Turn Bay Length (ft)	160			80			140			350		
Base Capacity (vph)	371	1020		319	630	441	403	1745		257	1756	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.32	0.35		0.24	0.48	0.71	0.25	0.61		1.03	0.38	

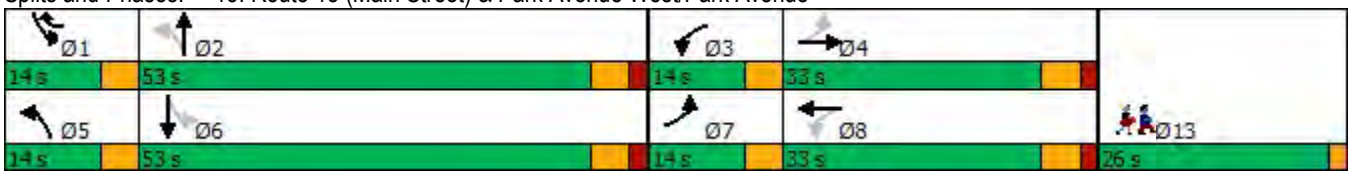
Intersection Summary
Cycle Length: 140

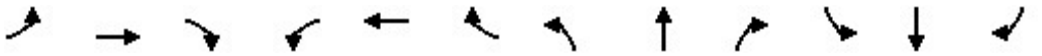
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	19%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	17.0
Pedestrian Calls (#/hr)	5
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 99.9
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 13: Route 18 (Main Street) & Park Avenue West/Park Avenue

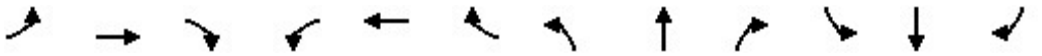




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	272	46	73	255	271	90	918	40	230	553	32
Future Volume (vph)	103	272	46	73	255	271	90	918	40	230	553	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	11	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3347		1609	1708	1568	1736	3419		1736	3439	
Flt Permitted	0.55	1.00		0.47	0.99	1.00	0.30	1.00		0.10	1.00	
Satd. Flow (perm)	963	3347		788	1696	1568	555	3419		183	3439	
Peak-hour factor, PHF	0.88	0.88	0.88	0.87	0.87	0.87	0.90	0.90	0.90	0.87	0.87	0.87
Adj. Flow (vph)	117	309	52	84	293	311	100	1020	44	264	636	37
RTOR Reduction (vph)	0	9	0	0	0	279	0	2	0	0	3	0
Lane Group Flow (vph)	117	352	0	76	301	32	100	1062	0	264	670	0
Heavy Vehicles (%)	5%	2%	2%	3%	2%	3%	4%	5%	3%	4%	4%	6%
Turn Type	pm+pt	NA		pm+pt	NA	Over	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	30.8	21.0		25.0	25.0	10.4	46.7	38.1		50.3	39.9	
Effective Green, g (s)	30.8	23.0		25.0	29.0	10.4	46.7	40.1		50.3	41.9	
Actuated g/C Ratio	0.30	0.23		0.25	0.28	0.10	0.46	0.39		0.49	0.41	
Clearance Time (s)	4.0	6.0		4.0	6.0	4.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	358	756		249	484	160	354	1346		249	1415	
v/s Ratio Prot	c0.03	0.11		0.02	c0.05	0.02	0.02	0.31		c0.11	0.19	
v/s Ratio Perm	0.07			0.05	c0.12		0.11			c0.42		
v/c Ratio	0.33	0.47		0.31	0.62	0.20	0.28	0.79		1.06	0.47	
Uniform Delay, d1	26.6	34.1		30.4	31.6	41.9	16.3	27.1		27.3	21.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.5		0.7	2.5	0.6	0.4	3.2		73.8	0.3	
Delay (s)	27.2	34.5		31.1	34.1	42.5	16.7	30.3		101.1	22.1	
Level of Service	C	C		C	C	D	B	C		F	C	
Approach Delay (s)		32.7			37.6			29.1			44.4	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	35.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	101.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	316	39	62	277	155	45	838	56	212	1025	48
Future Volume (vph)	73	316	39	62	277	155	45	838	56	212	1025	48
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.984				0.850		0.991			0.993	
Flt Protected	0.950			0.950	0.999		0.950			0.950		
Satd. Flow (prot)	1745	3415	0	1658	1743	1615	1805	3512	0	1787	3518	0
Flt Permitted	0.459			0.360	0.993		0.119			0.146		
Satd. Flow (perm)	843	3415	0	628	1733	1615	226	3512	0	275	3518	0
Satd. Flow (RTOR)		9				166		5			4	
Adj. Flow (vph)	78	340	42	73	326	182	48	891	60	236	1139	53
Lane Group Flow (vph)	78	382	0	66	333	182	48	951	0	236	1192	0
Turn Type	pm+pt	NA		pm+pt	NA	Over	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	11.0		9.0	11.0	10.0	9.0	11.0		10.0	11.0	
Total Split (s)	14.0	33.0		14.0	33.0	14.0	14.0	53.0		14.0	53.0	
Total Split (%)	10.0%	23.6%		10.0%	23.6%	10.0%	10.0%	37.9%		10.0%	37.9%	
Maximum Green (s)	10.0	27.0		10.0	27.0	10.0	10.0	47.0		10.0	47.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0	0.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	-2.0		0.0	-2.0	0.0	0.0	-2.0		0.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.25	0.52		0.26	0.70	0.57	0.21	0.65		0.75	0.70	
Control Delay	30.2	39.9		30.8	42.4	18.5	16.2	27.3		33.0	26.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	30.2	39.9		30.8	42.4	18.5	16.2	27.3		33.0	26.9	
Queue Length 50th (ft)	35	112		30	184	9	11	222		62	287	
Queue Length 95th (ft)	94	215		81	358	79	49	486		#316	#706	
Internal Link Dist (ft)		344			343			987			2915	
Turn Bay Length (ft)	160			80			140			350		
Base Capacity (vph)	340	1070		289	653	321	288	1851		315	1855	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.23	0.36		0.23	0.51	0.57	0.17	0.51		0.75	0.64	

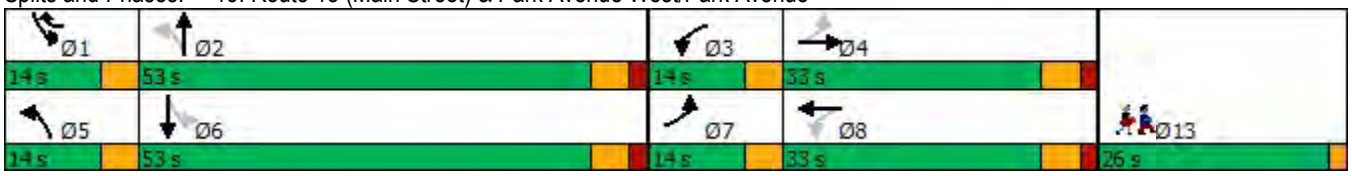
Intersection Summary
Cycle Length: 140

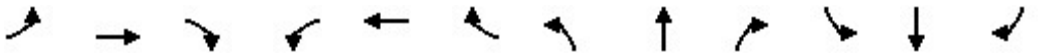
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	19%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	17.0
Pedestrian Calls (#/hr)	5
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 98.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 13: Route 18 (Main Street) & Park Avenue West/Park Avenue

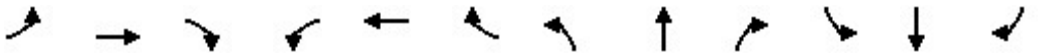




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	316	39	62	277	155	45	838	56	212	1025	48
Future Volume (vph)	73	316	39	62	277	155	45	838	56	212	1025	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	11	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	3413		1658	1743	1615	1805	3510		1787	3519	
Flt Permitted	0.46	1.00		0.36	0.99	1.00	0.12	1.00		0.15	1.00	
Satd. Flow (perm)	843	3413		629	1733	1615	225	3510		276	3519	
Peak-hour factor, PHF	0.93	0.93	0.93	0.85	0.85	0.85	0.94	0.94	0.94	0.90	0.90	0.90
Adj. Flow (vph)	78	340	42	73	326	182	48	891	60	236	1139	53
RTOR Reduction (vph)	0	7	0	0	0	149	0	3	0	0	2	0
Lane Group Flow (vph)	78	375	0	66	333	33	48	948	0	236	1190	0
Heavy Vehicles (%)	0%	0%	5%	0%	0%	0%	0%	2%	0%	1%	2%	0%
Turn Type	pm+pt	NA		pm+pt	NA	Over	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.7	18.8		24.9	24.9	10.6	46.2	40.5		55.1	45.4	
Effective Green, g (s)	25.7	20.8		24.9	28.9	10.6	46.2	42.5		55.1	47.4	
Actuated g/C Ratio	0.25	0.20		0.24	0.28	0.10	0.45	0.42		0.54	0.47	
Clearance Time (s)	4.0	6.0		4.0	6.0	4.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	273	697		219	492	168	190	1465		306	1638	
v/s Ratio Prot	0.02	0.11		0.02	c0.06	0.02	0.01	0.27		c0.08	0.34	
v/s Ratio Perm	0.05			0.05	0.14		0.10			c0.34		
v/c Ratio	0.29	0.54		0.30	0.68	0.20	0.25	0.65		0.77	0.73	
Uniform Delay, d1	29.8	36.2		30.4	32.3	41.7	17.8	23.7		16.7	22.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.8		0.8	3.7	0.6	0.7	1.0		11.4	1.6	
Delay (s)	30.4	37.0		31.2	36.0	42.3	18.5	24.7		28.1	23.6	
Level of Service	C	D		C	D	D	B	C		C	C	
Approach Delay (s)		35.9			37.4			24.4			24.3	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	101.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	310	42	63	246	130	53	832	42	293	1002	53
Future Volume (vph)	94	310	42	63	246	130	53	832	42	293	1002	53
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.982				0.850		0.993			0.992	
Flt Protected	0.950			0.950	0.999		0.950			0.950		
Satd. Flow (prot)	1745	3389	0	1658	1726	1615	1770	3551	0	1787	3511	0
Flt Permitted	0.550			0.439	0.991		0.124			0.131		
Satd. Flow (perm)	1010	3389	0	766	1712	1615	231	3551	0	246	3511	0
Satd. Flow (RTOR)		10				155		4			4	
Adj. Flow (vph)	102	337	46	75	293	155	57	895	45	308	1055	56
Lane Group Flow (vph)	102	383	0	67	301	155	57	940	0	308	1111	0
Turn Type	pm+pt	NA		pm+pt	NA	Over	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	11.0		9.0	11.0	10.0	9.0	11.0		10.0	11.0	
Total Split (s)	14.0	33.0		14.0	33.0	14.0	14.0	53.0		14.0	53.0	
Total Split (%)	10.0%	23.6%		10.0%	23.6%	10.0%	10.0%	37.9%		10.0%	37.9%	
Maximum Green (s)	10.0	27.0		10.0	27.0	10.0	10.0	47.0		10.0	47.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0	0.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	-2.0		0.0	-2.0	0.0	0.0	-2.0		0.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.26	0.47		0.23	0.67	0.50	0.25	0.68		1.04	0.71	
Control Delay	28.8	37.2		29.1	39.7	14.7	16.8	28.8		87.8	27.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	28.8	37.2		29.1	39.7	14.7	16.8	28.8		87.8	27.9	
Queue Length 50th (ft)	41	101		27	143	0	13	215		108	258	
Queue Length 95th (ft)	117	215		81	318	56	57	477		#493	#630	
Internal Link Dist (ft)		344			343			987			2915	
Turn Bay Length (ft)	160			80			140			350		
Base Capacity (vph)	399	1066		329	652	312	280	1878		295	1857	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.26	0.36		0.20	0.46	0.50	0.20	0.50		1.04	0.60	

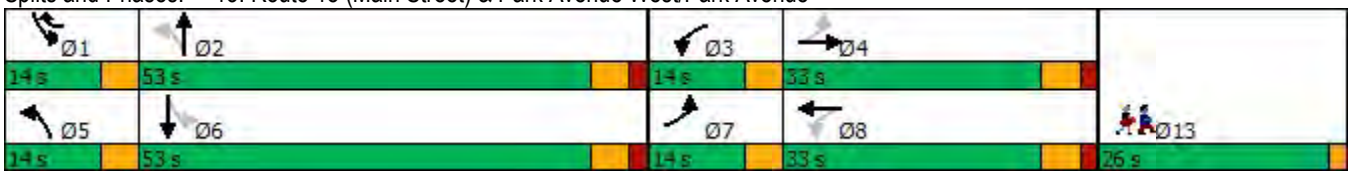
Intersection Summary
Cycle Length: 140

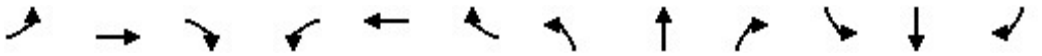
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	19%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	17.0
Pedestrian Calls (#/hr)	5
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 97.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 13: Route 18 (Main Street) & Park Avenue West/Park Avenue



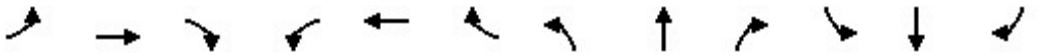


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	310	42	63	246	130	53	832	42	293	1002	53
Future Volume (vph)	94	310	42	63	246	130	53	832	42	293	1002	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	11	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	3389		1658	1726	1615	1770	3550		1787	3512	
Flt Permitted	0.55	1.00		0.44	0.99	1.00	0.12	1.00		0.13	1.00	
Satd. Flow (perm)	1010	3389		767	1713	1615	230	3550		247	3512	
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.93	0.93	0.93	0.95	0.95	0.95
Adj. Flow (vph)	102	337	46	75	293	155	57	895	45	308	1055	56
RTOR Reduction (vph)	0	8	0	0	0	139	0	2	0	0	2	0
Lane Group Flow (vph)	102	375	0	67	301	16	57	938	0	308	1109	0
Heavy Vehicles (%)	0%	1%	2%	0%	1%	0%	2%	1%	0%	1%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Over	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	30.3	20.9		24.7	24.7	10.5	43.1	36.9		51.4	41.2	
Effective Green, g (s)	30.3	22.9		24.7	28.7	10.5	43.1	38.9		51.4	43.2	
Actuated g/C Ratio	0.30	0.23		0.25	0.29	0.10	0.43	0.39		0.51	0.43	
Clearance Time (s)	4.0	6.0		4.0	6.0	4.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	374	774		247	491	169	194	1378		288	1514	
v/s Ratio Prot	c0.03	0.11		0.02	c0.05	0.01	0.02	0.26		c0.11	0.32	
v/s Ratio Perm	0.06			0.05	c0.12		0.11			c0.44		
v/c Ratio	0.27	0.48		0.27	0.61	0.10	0.29	0.68		1.07	0.73	
Uniform Delay, d1	25.9	33.5		29.7	30.9	40.6	18.9	25.5		22.8	23.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.5		0.6	2.3	0.2	0.8	1.4		72.7	1.9	
Delay (s)	26.3	34.0		30.3	33.2	40.8	19.7	26.9		95.5	25.6	
Level of Service	C	C		C	C	D	B	C		F	C	
Approach Delay (s)		32.4			35.1			26.5			40.7	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	34.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Route 18 at Columbian Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	53	58	30	93	146	163	1044	35	152	477	31
Future Volume (vph)	8	53	58	30	93	146	163	1044	35	152	477	31
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.995			0.991	
Flt Protected		0.994			0.988		0.950			0.950		
Satd. Flow (prot)	0	1676	1436	0	1723	1422	1906	3337	0	1687	3411	0
Flt Permitted		0.955			0.912		0.408			0.950		
Satd. Flow (perm)	0	1610	1436	0	1590	1422	819	3337	0	1687	3411	0
Satd. Flow (RTOR)			66			160		3			6	
Adj. Flow (vph)	9	60	66	33	102	160	168	1076	36	192	604	39
Lane Group Flow (vph)	0	69	66	0	135	160	168	1112	0	192	643	0
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA		Prot	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2					
Detector Phase	4	4	5	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	11.0	10.0	11.0	11.0	11.0	10.0	11.0		10.0	11.0	
Total Split (s)	32.0	32.0	19.0	32.0	32.0	32.0	19.0	57.0		19.0	57.0	
Total Split (%)	24.1%	24.1%	14.3%	24.1%	24.1%	24.1%	14.3%	42.9%		14.3%	42.9%	
Maximum Green (s)	26.0	26.0	16.0	26.0	26.0	26.0	16.0	51.0		15.0	51.0	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	3.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0	0.0	-2.0		0.0	-2.0	
Total Lost Time (s)		4.0	1.0		4.0	4.0	3.0	4.0		4.0	4.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.23	0.11		0.46	0.41	0.28	0.76		0.61	0.36	
Control Delay		36.3	4.8		40.3	9.9	8.6	25.4		46.4	14.8	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		36.3	4.8		40.3	9.9	8.6	25.4		46.4	14.8	
Queue Length 50th (ft)		28	0		58	0	21	220		86	85	
Queue Length 95th (ft)		92	21		168	61	102	519		#258	211	
Internal Link Dist (ft)		1920			515			1771			987	
Turn Bay Length (ft)			170			190	175			145		
Base Capacity (vph)		562	694		555	601	750	2207		315	2267	
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		0.12	0.10		0.24	0.27	0.22	0.50		0.61	0.28	

Intersection Summary
Cycle Length: 133

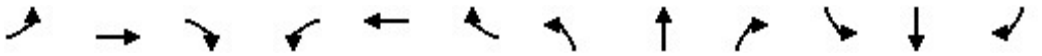
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	25.0
Total Split (s)	25.0
Total Split (%)	19%
Maximum Green (s)	23.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	10.0
Flash Dont Walk (s)	13.0
Pedestrian Calls (#/hr)	11
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 85.2
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 14: Route 18 (Main Street) & Columbian Street

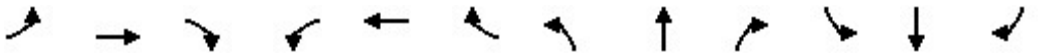




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	53	58	30	93	146	163	1044	35	152	477	31
Future Volume (vph)	8	53	58	30	93	146	163	1044	35	152	477	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	14	11	12	12	12	12
Total Lost time (s)		4.0	1.0		4.0	4.0	3.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.99	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1675	1436		1722	1422	1906	3337		1687	3411	
Flt Permitted		0.96	1.00		0.91	1.00	0.41	1.00		0.95	1.00	
Satd. Flow (perm)		1611	1436		1590	1422	818	3337		1687	3411	
Peak-hour factor, PHF	0.88	0.88	0.88	0.91	0.91	0.91	0.97	0.97	0.97	0.79	0.79	0.79
Adj. Flow (vph)	9	60	66	33	102	160	168	1076	36	192	604	39
RTOR Reduction (vph)	0	0	45	0	0	131	0	2	0	0	3	0
Lane Group Flow (vph)	0	69	21	0	135	29	168	1110	0	192	640	0
Heavy Vehicles (%)	13%	4%	5%	7%	0%	6%	1%	4%	6%	7%	5%	3%
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA		Prot	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)		13.7	23.6		13.7	13.7	45.2	35.3		16.0	42.4	
Effective Green, g (s)		15.7	27.6		15.7	15.7	45.2	37.3		16.0	44.4	
Actuated g/C Ratio		0.18	0.32		0.18	0.18	0.53	0.43		0.19	0.52	
Clearance Time (s)		6.0	3.0		6.0	6.0	3.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		294	460		290	259	555	1447		313	1761	
v/s Ratio Prot			0.01				0.03	c0.33		c0.11	0.19	
v/s Ratio Perm		0.04	0.01		c0.08	0.02	0.12					
v/c Ratio		0.23	0.05		0.47	0.11	0.30	0.77		0.61	0.36	
Uniform Delay, d1		30.0	20.1		31.4	29.3	10.6	20.7		32.2	12.4	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4	0.0		1.2	0.2	0.3	2.5		3.5	0.1	
Delay (s)		30.4	20.2		32.6	29.5	10.9	23.2		35.7	12.5	
Level of Service		C	C		C	C	B	C		D	B	
Approach Delay (s)		25.4			30.9			21.6			17.8	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	165	217	38	108	182	149	753	12	129	967	25
Future Volume (vph)	51	165	217	38	108	182	149	753	12	129	967	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.998			0.996	
Flt Protected		0.988			0.987		0.950			0.950		
Satd. Flow (prot)	0	1752	1507	0	1750	1492	1925	3415	0	1703	3527	0
Flt Permitted		0.888			0.848		0.126			0.950		
Satd. Flow (perm)	0	1575	1507	0	1504	1492	255	3415	0	1703	3527	0
Satd. Flow (RTOR)			261			214		1			2	
Adj. Flow (vph)	61	199	261	45	127	214	169	856	14	139	1040	27
Lane Group Flow (vph)	0	260	261	0	172	214	169	870	0	139	1067	0
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA		Prot	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2					
Detector Phase	4	4	5	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	11.0	10.0	11.0	11.0	11.0	10.0	11.0		10.0	11.0	
Total Split (s)	32.0	32.0	19.0	32.0	32.0	32.0	19.0	57.0		19.0	57.0	
Total Split (%)	24.1%	24.1%	14.3%	24.1%	24.1%	24.1%	14.3%	42.9%		14.3%	42.9%	
Maximum Green (s)	26.0	26.0	16.0	26.0	26.0	26.0	16.0	51.0		15.0	51.0	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	3.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0	0.0	-2.0		0.0	-2.0	
Total Lost Time (s)		4.0	1.0		4.0	4.0	3.0	4.0		4.0	4.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.53	0.30		0.37	0.35	0.51	0.69		0.57	0.75	
Control Delay		35.7	2.8		32.8	6.9	17.3	27.9		51.0	28.1	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		35.7	2.8		32.8	6.9	17.3	27.9		51.0	28.1	
Queue Length 50th (ft)		110	0		68	0	37	203		69	243	
Queue Length 95th (ft)		287	27		197	54	108	375		#215	498	
Internal Link Dist (ft)		1920			515			1771			987	
Turn Bay Length (ft)			170			190	175			145		
Base Capacity (vph)		509	962		486	627	450	2091		295	2160	
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		0.51	0.27		0.35	0.34	0.38	0.42		0.47	0.49	

Intersection Summary
Cycle Length: 133

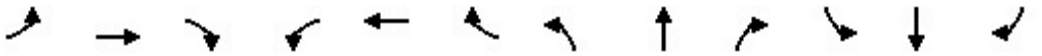
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	25.0
Total Split (s)	25.0
Total Split (%)	19%
Maximum Green (s)	23.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	10.0
Flash Dont Walk (s)	13.0
Pedestrian Calls (#/hr)	11
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 91
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 14: Route 18 (Main Street) & Columbian Street

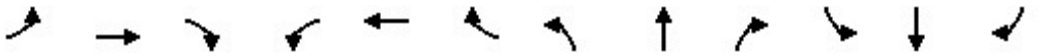




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	165	217	38	108	182	149	753	12	129	967	25
Future Volume (vph)	51	165	217	38	108	182	149	753	12	129	967	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	14	11	12	12	12	12
Total Lost time (s)		4.0	1.0		4.0	4.0	3.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.99	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1753	1507		1750	1492	1925	3414		1703	3528	
Flt Permitted		0.89	1.00		0.85	1.00	0.13	1.00		0.95	1.00	
Satd. Flow (perm)		1575	1507		1504	1492	256	3414		1703	3528	
Peak-hour factor, PHF	0.83	0.83	0.83	0.85	0.85	0.85	0.88	0.88	0.88	0.93	0.93	0.93
Adj. Flow (vph)	61	199	261	45	127	214	169	856	14	139	1040	27
RTOR Reduction (vph)	0	0	144	0	0	149	0	1	0	0	1	0
Lane Group Flow (vph)	0	260	117	0	172	65	169	869	0	139	1066	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	0%	2%	0%	6%	2%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA		Prot	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)		26.1	37.2		26.1	26.1	42.8	31.7		13.0	34.6	
Effective Green, g (s)		28.1	41.2		28.1	28.1	42.8	33.7		13.0	36.6	
Actuated g/C Ratio		0.31	0.45		0.31	0.31	0.47	0.37		0.14	0.40	
Clearance Time (s)		6.0	3.0		6.0	6.0	3.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		481	675		459	456	320	1251		240	1405	
v/s Ratio Prot			0.02				0.06	0.25		c0.08	c0.30	
v/s Ratio Perm		c0.17	0.05		0.11	0.04	0.18					
v/c Ratio		0.54	0.17		0.37	0.14	0.53	0.69		0.58	0.76	
Uniform Delay, d1		26.5	15.2		25.0	23.2	16.9	24.7		36.9	23.8	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.2	0.1		0.5	0.1	1.6	1.7		3.4	2.4	
Delay (s)		27.8	15.3		25.5	23.3	18.5	26.4		40.3	26.2	
Level of Service		C	B		C	C	B	C		D	C	
Approach Delay (s)		21.5			24.3			25.1			27.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	91.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	118	136	13	93	128	121	897	11	164	886	19
Future Volume (vph)	12	118	136	13	93	128	121	897	11	164	886	19
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.998			0.997	
Flt Protected		0.996			0.994		0.950			0.950		
Satd. Flow (prot)	0	1766	1507	0	1745	1507	1925	3449	0	1787	3564	0
Flt Permitted		0.968			0.952		0.226			0.950		
Satd. Flow (perm)	0	1717	1507	0	1671	1507	458	3449	0	1787	3564	0
Satd. Flow (RTOR)			153			149		1			2	
Adj. Flow (vph)	13	133	153	15	108	149	129	954	12	186	1007	22
Lane Group Flow (vph)	0	146	153	0	123	149	129	966	0	186	1029	0
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA		Prot	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2					
Detector Phase	4	4	5	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	11.0	10.0	11.0	11.0	11.0	10.0	11.0		10.0	11.0	
Total Split (s)	32.0	32.0	19.0	32.0	32.0	32.0	19.0	57.0		19.0	57.0	
Total Split (%)	24.1%	24.1%	14.3%	24.1%	24.1%	24.1%	14.3%	42.9%		14.3%	42.9%	
Maximum Green (s)	26.0	26.0	16.0	26.0	26.0	26.0	16.0	51.0		15.0	51.0	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	3.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0		0.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0	0.0	-2.0		0.0	-2.0	
Total Lost Time (s)		4.0	1.0		4.0	4.0	3.0	4.0		4.0	4.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.44	0.23		0.38	0.36	0.32	0.69		0.54	0.57	
Control Delay		36.9	3.8		36.1	9.4	9.9	23.4		41.0	17.2	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		36.9	3.8		36.1	9.4	9.9	23.4		41.0	17.2	
Queue Length 50th (ft)		56	0		47	0	15	173		72	145	
Queue Length 95th (ft)		176	32		146	51	80	420		#285	413	
Internal Link Dist (ft)		1920			515			1771			987	
Turn Bay Length (ft)			170			190	175			145		
Base Capacity (vph)		656	822		639	668	613	2496		366	2599	
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		0.22	0.19		0.19	0.22	0.21	0.39		0.51	0.40	

Intersection Summary
Cycle Length: 133

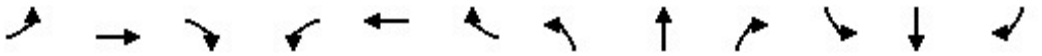
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	25.0
Total Split (s)	25.0
Total Split (%)	19%
Maximum Green (s)	23.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	10.0
Flash Dont Walk (s)	13.0
Pedestrian Calls (#/hr)	11
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 79.4
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 14: Route 18 (Main Street) & Columbian Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	118	136	13	93	128	121	897	11	164	886	19
Future Volume (vph)	12	118	136	13	93	128	121	897	11	164	886	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	14	11	12	12	12	12
Total Lost time (s)		4.0	1.0		4.0	4.0	3.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		1.00	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1765	1507		1745	1507	1925	3449		1787	3564	
Flt Permitted		0.97	1.00		0.95	1.00	0.23	1.00		0.95	1.00	
Satd. Flow (perm)		1716	1507		1672	1507	457	3449		1787	3564	
Peak-hour factor, PHF	0.89	0.89	0.89	0.86	0.86	0.86	0.94	0.94	0.94	0.88	0.88	0.88
Adj. Flow (vph)	13	133	153	15	108	149	129	954	12	186	1007	22
RTOR Reduction (vph)	0	0	103	0	0	120	0	1	0	0	1	0
Lane Group Flow (vph)	0	146	50	0	123	29	129	965	0	186	1028	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%	0%	1%	0%	1%	1%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA		Prot	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2					
Actuated Green, G (s)		13.4	22.3		13.4	13.4	39.2	30.3		15.4	37.8	
Effective Green, g (s)		15.4	26.3		15.4	15.4	39.2	32.3		15.4	39.8	
Actuated g/C Ratio		0.19	0.33		0.19	0.19	0.49	0.40		0.19	0.50	
Clearance Time (s)		6.0	3.0		6.0	6.0	3.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		330	496		322	290	387	1394		344	1775	
v/s Ratio Prot			0.01				0.04	c0.28		c0.10	0.29	
v/s Ratio Perm		c0.09	0.02		0.07	0.02	0.13					
v/c Ratio		0.44	0.10		0.38	0.10	0.33	0.69		0.54	0.58	
Uniform Delay, d1		28.5	18.6		28.1	26.5	11.4	19.7		29.1	14.1	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.9	0.1		0.8	0.2	0.5	1.5		1.7	0.5	
Delay (s)		29.4	18.7		28.9	26.7	11.9	21.2		30.8	14.6	
Level of Service		C	B		C	C	B	C		C	B	
Approach Delay (s)		23.9			27.7			20.1			17.1	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	79.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Columbian Street at Pleasant Street and Union Street

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	54	649	39	87	355	132	63	97	56	14	144	146
Future Vol, veh/h	54	649	39	87	355	132	63	97	56	14	144	146
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	85	-	95	90	-	80	70	-	90
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	88	88	88	82	82	82	82	82	82
Heavy Vehicles, %	0	1	3	0	1	0	2	5	4	0	4	1
Mvmt Flow	58	698	42	99	403	150	77	118	68	17	176	178

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	553	0	0	740	0	0	1524	1457	403	1604	1586	719
Stage 1	-	-	-	-	-	-	601	601	-	835	835	-
Stage 2	-	-	-	-	-	-	923	856	-	769	751	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.12	6.55	6.24	7.1	6.54	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.55	-	6.1	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.55	-	6.1	5.54	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.518	4.045	3.336	3.5	4.036	3.309
Pot Cap-1 Maneuver	1027	-	-	876	-	-	97	128	643	86	~ 107	430
Stage 1	-	-	-	-	-	-	487	485	-	365	380	-
Stage 2	-	-	-	-	-	-	323	370	-	397	415	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1027	-	-	876	-	-	-	~ 103	643	-	~ 86	430
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 103	-	-	~ 86	-
Stage 1	-	-	-	-	-	-	440	430	-	330	343	-
Stage 2	-	-	-	-	-	-	83	334	-	228	368	-

Approach	EB	WB	SE	NW
HCM Control Delay, s	0.6	1.5		
HCM LOS			-	-

Minor Lane/Major Mvmt	NWLn1	NWLn2	NWLn3	EBL	EBT	EBR	WBL	WBT	WBR	SELn1	SELn2	SELn3
Capacity (veh/h)	-	86	430	1027	-	-	876	-	-	-	103	643
HCM Lane V/C Ratio	-	2.042	0.414	0.057	-	-	0.113	-	-	-	1.148	0.106
HCM Control Delay (s)	-	$ 587	19.2	8.7	0	-	9.6	-	-	-	211.8	11.3
HCM Lane LOS	-	F	C	A	A	-	A	-	-	-	F	B
HCM 95th %tile Q(veh)	-	15.5	2	0.2	-	-	0.4	-	-	-	7.7	0.4

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

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	37	502	61	169	621	66	108	156	135	36	140	102
Future Vol, veh/h	37	502	61	169	621	66	108	156	135	36	140	102
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	85	-	95	90	-	80	70	-	90
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	94	94	94	85	85	85	80	80	80
Heavy Vehicles, %	0	0	0	1	0	0	1	1	2	3	0	1
Mvmt Flow	44	591	72	180	661	70	127	184	159	45	175	128

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	731	0	0	663	0	0	1824	1772	661	1943	1806	627
Stage 1	-	-	-	-	-	-	1021	1021	-	715	715	-
Stage 2	-	-	-	-	-	-	803	751	-	1228	1091	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.11	6.51	6.22	7.13	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.13	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.13	5.5	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.509	4.009	3.318	3.527	4	3.309
Pot Cap-1 Maneuver	883	-	-	931	-	-	~ 60	~ 84	462	49	~ 80	485
Stage 1	-	-	-	-	-	-	286	315	-	420	438	-
Stage 2	-	-	-	-	-	-	379	420	-	217	293	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	883	-	-	931	-	-	-	~ 62	462	-	~ 59	485
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 62	-	-	~ 59	-
Stage 1	-	-	-	-	-	-	263	254	-	386	403	-
Stage 2	-	-	-	-	-	-	145	386	-	~ 32	236	-

Approach	EB	WB	SE	NW
HCM Control Delay, s	0.6	1.9		
HCM LOS			-	-

Minor Lane/Major Mvmt	NWLn1	NWLn2	NWLn3	EBL	EBT	EBR	WBL	WBT	WBR	SELn1	SELn2	SELn3
Capacity (veh/h)	-	59	485	883	-	-	931	-	-	-	62	462
HCM Lane V/C Ratio	-	2.966	0.263	0.049	-	-	0.193	-	-	-	2.96	0.344
HCM Control Delay (s)	-	$ 1034.8	15	9.3	0	-	9.8	-	-	-	$ 1025.5	16.8
HCM Lane LOS	-	F	C	A	A	-	A	-	-	-	F	C
HCM 95th %tile Q(veh)	-	18.1	1	0.2	-	-	0.7	-	-	-	18.8	1.5

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

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	60	564	54	135	455	51	69	146	101	57	132	120
Future Vol, veh/h	60	564	54	135	455	51	69	146	101	57	132	120
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	85	-	95	90	-	80	70	-	90
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	92	92	92	95	95	95	80	80	80
Heavy Vehicles, %	2	0	0	1	1	0	1	1	2	0	0	0
Mvmt Flow	71	664	64	147	495	55	73	154	106	71	165	150

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	550	0	0	728	0	0	1710	1659	495	1785	1682	696
Stage 1	-	-	-	-	-	-	789	789	-	838	838	-
Stage 2	-	-	-	-	-	-	921	870	-	947	844	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.11	6.51	6.22	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.509	4.009	3.318	3.5	4	3.3
Pot Cap-1 Maneuver	1020	-	-	880	-	-	~ 72	~ 98	575	~ 64	~ 95	445
Stage 1	-	-	-	-	-	-	385	403	-	364	384	-
Stage 2	-	-	-	-	-	-	326	370	-	316	382	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1020	-	-	880	-	-	-	~ 72	575	-	~ 70	445
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 72	-	-	~ 70	-
Stage 1	-	-	-	-	-	-	340	336	-	321	339	-
Stage 2	-	-	-	-	-	-	98	326	-	116	318	-

Approach	EB	WB	SE	NW
HCM Control Delay, s	0.8	2.1		
HCM LOS			-	-

Minor Lane/Major Mvmt	NWLn1	NWLn2	NWLn3	EBL	EBT	EBR	WBL	WBT	WBR	SELn1	SELn2	SELn3
Capacity (veh/h)	-	70	445	1020	-	-	880	-	-	-	72	575
HCM Lane V/C Ratio	-	2.357	0.337	0.069	-	-	0.167	-	-	-	2.135	0.185
HCM Control Delay (s)	-	$ 746.2	17.1	8.8	0	-	9.9	-	-	-	$ 646.7	12.7
HCM Lane LOS	-	F	C	A	A	-	A	-	-	-	F	B
HCM 95th %tile Q(veh)	-	15.8	1.5	0.2	-	-	0.6	-	-	-	14.3	0.7

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

Park Avenue at Pleasant Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL2	NEL	NER
Lane Configurations												
Traffic Volume (vph)	98	151	282	171	145	24	13	327	113	24	462	18
Future Volume (vph)	98	151	282	171	145	24	13	327	113	24	462	18
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.97	0.95
Frt		0.902			0.979		0.859	0.850			0.995	
Flt Protected	0.950			0.950			0.997				0.954	
Satd. Flow (prot)	1671	1708	0	1787	1703	0	1575	1433	0	0	3385	0
Flt Permitted	0.950			0.950			0.947				0.921	
Satd. Flow (perm)	1671	1708	0	1787	1703	0	1496	1433	0	0	3268	0
Satd. Flow (RTOR)		84			8			98			98	
Adj. Flow (vph)	113	174	324	184	156	26	15	376	130	26	491	19
Lane Group Flow (vph)	113	498	0	184	182	0	252	269	0	0	536	0
Turn Type	Prot	NA		Prot	NA		Perm	Prot		Perm	Prot	
Protected Phases	7	4		3	8			6			2	
Permitted Phases							6			2		
Detector Phase	7	4		3	8		6	6		2	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	11.0		10.0	11.0		14.0	14.0		15.0	15.0	
Total Split (s)	20.0	24.0		20.0	24.0		32.0	32.0		32.0	32.0	
Total Split (%)	20.0%	24.0%		20.0%	24.0%		32.0%	32.0%		32.0%	32.0%	
Maximum Green (s)	16.0	18.0		16.0	18.0		23.0	23.0		23.0	23.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		5.0	5.0		5.0	5.0	
Lost Time Adjust (s)	0.0	-2.0		0.0	-2.0		-5.0	-5.0			-5.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.46	0.88		0.59	0.29		0.55	0.53			0.50	
Control Delay	37.1	42.7		38.2	23.5		27.8	18.5			19.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	37.1	42.7		38.2	23.5		27.8	18.5			19.2	
Queue Length 50th (ft)	42	157		68	51		81	54			69	
Queue Length 95th (ft)	116	#520		#185	170		214	175			174	
Internal Link Dist (ft)		363			1242		217				217	
Turn Bay Length (ft)	150			120								
Base Capacity (vph)	394	563		421	618		617	649			1407	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.29	0.88		0.44	0.29		0.41	0.41			0.38	

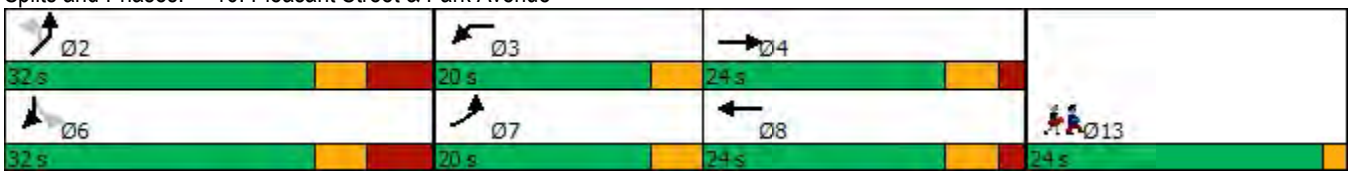
Intersection Summary
Cycle Length: 100

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	24%
Maximum Green (s)	22.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	3
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 70.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Pleasant Street & Park Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL2	NEL	NER
Lane Configurations												
Traffic Volume (vph)	98	151	282	171	145	24	13	327	113	24	462	18
Future Volume (vph)	98	151	282	171	145	24	13	327	113	24	462	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11	12	11	11	11	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			0.97	
Frt	1.00	0.90		1.00	0.98		0.86	0.85			0.99	
Flt Protected	0.95	1.00		0.95	1.00		1.00	1.00			0.95	
Satd. Flow (prot)	1671	1709		1787	1702		1575	1433			3384	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00			0.92	
Satd. Flow (perm)	1671	1709		1787	1702		1497	1433			3268	
Peak-hour factor, PHF	0.87	0.87	0.87	0.93	0.93	0.93	0.87	0.87	0.87	0.94	0.94	0.94
Adj. Flow (vph)	113	174	324	184	156	26	15	376	130	26	491	19
RTOR Reduction (vph)	0	59	0	0	5	0	0	69	0	0	69	0
Lane Group Flow (vph)	113	439	0	184	177	0	252	200	0	0	467	0
Heavy Vehicles (%)	8%	1%	0%	1%	3%	21%	8%	3%	4%	0%	3%	17%
Turn Type	Prot	NA		Prot	NA		Perm	Prot		Perm	Prot	
Protected Phases	7	4		3	8			6			2	
Permitted Phases							6			2		
Actuated Green, G (s)	8.7	19.8		12.3	23.4		16.4	16.4			16.4	
Effective Green, g (s)	8.7	21.8		12.3	25.4		21.4	21.4			21.4	
Actuated g/C Ratio	0.12	0.30		0.17	0.35		0.29	0.29			0.29	
Clearance Time (s)	4.0	6.0		4.0	6.0		9.0	9.0			9.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	200	513		302	595		441	422			963	
v/s Ratio Prot	0.07	c0.26		c0.10	c0.10			0.14				
v/s Ratio Perm							c0.17				0.14	
v/c Ratio	0.56	0.86		0.61	0.30		0.57	0.47			0.48	
Uniform Delay, d1	30.2	23.9		27.9	17.1		21.7	21.0			21.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	3.6	13.2		3.5	0.3		1.8	0.8			0.4	
Delay (s)	33.8	37.1		31.4	17.4		23.5	21.8			21.5	
Level of Service	C	D		C	B		C	C			C	
Approach Delay (s)		36.5			24.4		22.6				21.5	
Approach LOS		D			C		C				C	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	72.6	Sum of lost time (s)	14.0
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL2	NEL	NER
Lane Configurations												
Traffic Volume (vph)	142	281	26	269	222	28	24	561	130	34	429	20
Future Volume (vph)	142	281	26	269	222	28	24	561	130	34	429	20
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.97	0.95
Frt		0.987			0.983		0.860	0.850			0.994	
Flt Protected	0.950			0.950			0.997				0.954	
Satd. Flow (prot)	1787	1875	0	1805	1805	0	1625	1483	0	0	3488	0
Flt Permitted	0.950			0.950			0.869				0.800	
Satd. Flow (perm)	1787	1875	0	1805	1805	0	1416	1483	0	0	2925	0
Satd. Flow (RTOR)		4			6			98			98	
Adj. Flow (vph)	161	319	30	328	271	34	27	638	148	35	442	21
Lane Group Flow (vph)	161	349	0	328	305	0	397	416	0	0	498	0
Turn Type	Prot	NA		Prot	NA		Perm	Prot		Perm	Prot	
Protected Phases	7	4		3	8			6			2	
Permitted Phases							6			2		
Detector Phase	7	4		3	8		6	6		2	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	11.0		10.0	11.0		14.0	14.0		15.0	15.0	
Total Split (s)	20.0	24.0		20.0	24.0		32.0	32.0		32.0	32.0	
Total Split (%)	20.0%	24.0%		20.0%	24.0%		32.0%	32.0%		32.0%	32.0%	
Maximum Green (s)	16.0	18.0		16.0	18.0		23.0	23.0		23.0	23.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		5.0	5.0		5.0	5.0	
Lost Time Adjust (s)	0.0	-2.0		0.0	-2.0		0.0	-5.0			-5.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		9.0	4.0			4.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.61	0.75		0.90	0.56		0.97	0.71			0.46	
Control Delay	43.8	41.0		62.6	31.0		69.3	26.8			18.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	43.8	41.0		62.6	31.0		69.3	26.8			18.8	
Queue Length 50th (ft)	72	147		150	114		180	129			70	
Queue Length 95th (ft)	159	#374		#362	#275		#480	#371			163	
Internal Link Dist (ft)		363			1242		217				217	
Turn Bay Length (ft)	150			120								
Base Capacity (vph)	360	475		363	548		409	586			1094	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.45	0.73		0.90	0.56		0.97	0.71			0.46	

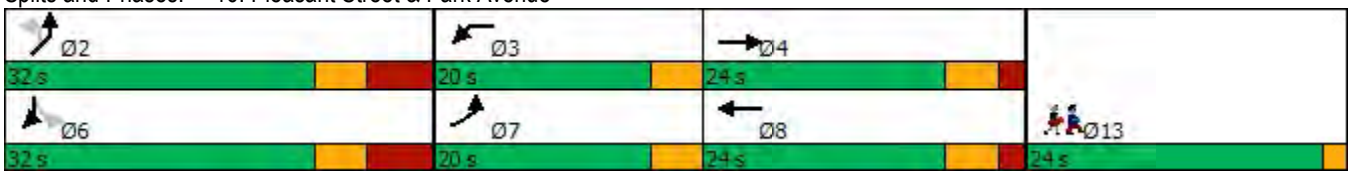
Intersection Summary
Cycle Length: 100

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	24%
Maximum Green (s)	22.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	3
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 80.4
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Pleasant Street & Park Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL2	NEL	NER
Lane Configurations												
Traffic Volume (vph)	142	281	26	269	222	28	24	561	130	34	429	20
Future Volume (vph)	142	281	26	269	222	28	24	561	130	34	429	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11	12	11	11	11	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		9.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			0.97	
Frt	1.00	0.99		1.00	0.98		0.86	0.85			0.99	
Flt Protected	0.95	1.00		0.95	1.00		1.00	1.00			0.95	
Satd. Flow (prot)	1787	1876		1805	1806		1624	1483			3488	
Flt Permitted	0.95	1.00		0.95	1.00		0.87	1.00			0.80	
Satd. Flow (perm)	1787	1876		1805	1806		1417	1483			2924	
Peak-hour factor, PHF	0.88	0.88	0.88	0.82	0.82	0.82	0.88	0.88	0.88	0.97	0.97	0.97
Adj. Flow (vph)	161	319	30	328	271	34	27	638	148	35	442	21
RTOR Reduction (vph)	0	3	0	0	4	0	0	64	0	0	64	0
Lane Group Flow (vph)	161	346	0	328	301	0	397	352	0	0	434	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%	5%
Turn Type	Prot	NA		Prot	NA		Perm	Prot		Perm	Prot	
Protected Phases	7	4		3	8			6			2	
Permitted Phases							6			2		
Actuated Green, G (s)	11.8	17.8		16.2	22.2		23.3	23.3			23.3	
Effective Green, g (s)	11.8	19.8		16.2	24.2		23.3	28.3			28.3	
Actuated g/C Ratio	0.14	0.24		0.20	0.30		0.28	0.35			0.35	
Clearance Time (s)	4.0	6.0		4.0	6.0		9.0	9.0			9.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	257	454		357	534		403	513			1011	
v/s Ratio Prot	0.09	c0.18		c0.18	0.17			0.24				
v/s Ratio Perm							c0.28				0.15	
v/c Ratio	0.63	0.76		0.92	0.56		0.99	0.69			0.43	
Uniform Delay, d1	32.9	28.8		32.2	24.3		29.1	22.9			20.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	4.7	7.4		27.7	1.4		40.6	3.8			0.3	
Delay (s)	37.6	36.2		59.9	25.7		69.6	26.7			20.8	
Level of Service	D	D		E	C		E	C			C	
Approach Delay (s)		36.7			43.4		47.7				20.8	
Approach LOS		D			D		D				C	

Intersection Summary			
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	81.8	Sum of lost time (s)	14.0
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL2	NEL	NER
Lane Configurations												
Traffic Volume (vph)	132	345	20	166	181	21	24	389	153	20	421	26
Future Volume (vph)	132	345	20	166	181	21	24	389	153	20	421	26
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.97	0.95
Frt		0.992			0.984		0.864	0.850			0.992	
Flt Protected	0.950			0.950			0.995				0.955	
Satd. Flow (prot)	1805	1885	0	1787	1807	0	1619	1468	0	0	3446	0
Flt Permitted	0.950			0.950			0.844				0.927	
Satd. Flow (perm)	1805	1885	0	1787	1807	0	1373	1468	0	0	3345	0
Satd. Flow (RTOR)		3			5			98			98	
Adj. Flow (vph)	159	416	24	182	199	23	26	414	163	24	495	31
Lane Group Flow (vph)	159	440	0	182	222	0	287	316	0	0	550	0
Turn Type	Prot	NA		Prot	NA		Perm	Prot		Perm	Prot	
Protected Phases	7	4		3	8			6			2	
Permitted Phases							6			2		
Detector Phase	7	4		3	8		6	6		2	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	11.0		10.0	11.0		14.0	14.0		15.0	15.0	
Total Split (s)	20.0	24.0		20.0	24.0		32.0	32.0		32.0	32.0	
Total Split (%)	20.0%	24.0%		20.0%	24.0%		32.0%	32.0%		32.0%	32.0%	
Maximum Green (s)	16.0	18.0		16.0	18.0		23.0	23.0		23.0	23.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		5.0	5.0		5.0	5.0	
Lost Time Adjust (s)	0.0	-2.0		0.0	-2.0		0.0	-5.0			-5.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		9.0	4.0			4.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.59	0.88		0.64	0.44		0.69	0.52			0.42	
Control Delay	41.5	50.2		42.6	28.7		36.9	18.7			17.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	41.5	50.2		42.6	28.7		36.9	18.7			17.7	
Queue Length 50th (ft)	67	185		76	78		110	72			72	
Queue Length 95th (ft)	146	#466		183	206		#335	231			164	
Internal Link Dist (ft)		363			1242		217				217	
Turn Bay Length (ft)	150			120								
Base Capacity (vph)	380	499		377	499		416	604			1297	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.42	0.88		0.48	0.44		0.69	0.52			0.42	

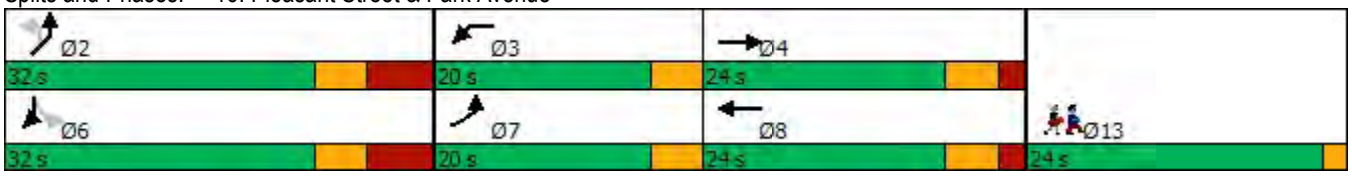
Intersection Summary
Cycle Length: 100

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	24%
Maximum Green (s)	22.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	3
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 77.2
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Pleasant Street & Park Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	SBR2	NEL2	NEL	NER
Lane Configurations												
Traffic Volume (vph)	132	345	20	166	181	21	24	389	153	20	421	26
Future Volume (vph)	132	345	20	166	181	21	24	389	153	20	421	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11	12	11	11	11	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		9.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			0.97	
Frt	1.00	0.99		1.00	0.98		0.86	0.85			0.99	
Flt Protected	0.95	1.00		0.95	1.00		1.00	1.00			0.95	
Satd. Flow (prot)	1805	1884		1787	1808		1619	1468			3444	
Flt Permitted	0.95	1.00		0.95	1.00		0.84	1.00			0.93	
Satd. Flow (perm)	1805	1884		1787	1808		1372	1468			3343	
Peak-hour factor, PHF	0.83	0.83	0.83	0.91	0.91	0.91	0.94	0.94	0.94	0.85	0.85	0.85
Adj. Flow (vph)	159	416	24	182	199	23	26	414	163	24	495	31
RTOR Reduction (vph)	0	2	0	0	4	0	0	63	0	0	63	0
Lane Group Flow (vph)	159	438	0	182	218	0	287	253	0	0	487	0
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	1%	1%	5%	1%	4%
Turn Type	Prot	NA		Prot	NA		Perm	Prot		Perm	Prot	
Protected Phases	7	4		3	8			6			2	
Permitted Phases							6			2		
Actuated Green, G (s)	11.6	18.3		12.4	19.1		23.4	23.4			23.4	
Effective Green, g (s)	11.6	20.3		12.4	21.1		23.4	28.4			28.4	
Actuated g/C Ratio	0.15	0.26		0.16	0.27		0.30	0.36			0.36	
Clearance Time (s)	4.0	6.0		4.0	6.0		9.0	9.0			9.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	266	487		282	485		408	531			1209	
v/s Ratio Prot	0.09	c0.23		c0.10	0.12			0.17				
v/s Ratio Perm							c0.21				0.15	
v/c Ratio	0.60	0.90		0.65	0.45		0.70	0.48			0.40	
Uniform Delay, d1	31.3	28.1		31.0	23.9		24.5	19.3			18.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	3.6	19.1		5.0	0.7		5.4	0.7			0.2	
Delay (s)	34.9	47.2		36.0	24.5		29.9	20.0			18.9	
Level of Service	C	D		D	C		C	C			B	
Approach Delay (s)		43.9			29.7		24.7				18.9	
Approach LOS		D			C		C				B	

Intersection Summary			
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	78.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Pleasant Street at Elm Street

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	18	31	587	21	18	450
Future Vol, veh/h	18	31	587	21	18	450
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	77	77	99	99	82	82
Heavy Vehicles, %	0	0	3	0	0	2
Mvmt Flow	23	40	593	21	22	549

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1197	604	0	0	614	0
Stage 1	604	-	-	-	-	-
Stage 2	593	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	207	502	-	-	975	-
Stage 1	550	-	-	-	-	-
Stage 2	556	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	200	502	-	-	975	-
Mov Cap-2 Maneuver	200	-	-	-	-	-
Stage 1	550	-	-	-	-	-
Stage 2	538	-	-	-	-	-

Approach	WB	NE	SW
HCM Control Delay, s	18.9	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	WBLn1	SWL	SWT
Capacity (veh/h)	-	-	323	975	-
HCM Lane V/C Ratio	-	-	0.197	0.023	-
HCM Control Delay (s)	-	-	18.9	8.8	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	29	40	588	25	18	692
Future Vol, veh/h	29	40	588	25	18	692
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	75	75	96	96	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	39	53	613	26	19	744

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1408	626	0	0	639	0
Stage 1	626	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	155	488	-	-	955	-
Stage 1	537	-	-	-	-	-
Stage 2	454	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	150	488	-	-	955	-
Mov Cap-2 Maneuver	150	-	-	-	-	-
Stage 1	537	-	-	-	-	-
Stage 2	439	-	-	-	-	-

Approach	WB	NE	SW
HCM Control Delay, s	27.4	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NET	NER	WBLn1	SWL	SWT
Capacity (veh/h)	-	-	251	955	-
HCM Lane V/C Ratio	-	-	0.367	0.02	-
HCM Control Delay (s)	-	-	27.4	8.8	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	1.6	0.1	-

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	26	29	550	27	32	525
Future Vol, veh/h	26	29	550	27	32	525
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	92	92	89	89	93	93
Heavy Vehicles, %	3	4	1	0	0	1
Mvmt Flow	28	32	618	30	34	565

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1266	633	0	0	648	0
Stage 1	633	-	-	-	-	-
Stage 2	633	-	-	-	-	-
Critical Hdwy	6.43	6.24	-	-	4.1	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.336	-	-	2.2	-
Pot Cap-1 Maneuver	186	476	-	-	947	-
Stage 1	527	-	-	-	-	-
Stage 2	527	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	176	476	-	-	947	-
Mov Cap-2 Maneuver	176	-	-	-	-	-
Stage 1	527	-	-	-	-	-
Stage 2	500	-	-	-	-	-

Approach	WB	NE	SW
HCM Control Delay, s	22.6	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	WBLn1	SWL	SWT
Capacity (veh/h)	-	-	264	947	-
HCM Lane V/C Ratio	-	-	0.226	0.036	-
HCM Control Delay (s)	-	-	22.6	8.9	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-

Pleasant Street at Pine Street

Intersection	
Int Delay, s/veh	7.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	257	657	10	195	416
Future Vol, veh/h	8	257	657	10	195	416
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	93	93	82	82
Heavy Vehicles, %	13	0	3	0	1	4
Mvmt Flow	8	268	706	11	238	507

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1695	712	0	0	717	0
Stage 1	712	-	-	-	-	-
Stage 2	983	-	-	-	-	-
Critical Hdwy	6.53	6.2	-	-	4.11	-
Critical Hdwy Stg 1	5.53	-	-	-	-	-
Critical Hdwy Stg 2	5.53	-	-	-	-	-
Follow-up Hdwy	3.617	3.3	-	-	2.209	-
Pot Cap-1 Maneuver	96	436	-	-	888	-
Stage 1	467	-	-	-	-	-
Stage 2	346	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	70	436	-	-	888	-
Mov Cap-2 Maneuver	70	-	-	-	-	-
Stage 1	467	-	-	-	-	-
Stage 2	253	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	36.6	0	3.4
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	377	888	-
HCM Lane V/C Ratio	-	-	0.732	0.268	-
HCM Control Delay (s)	-	-	36.6	10.5	-
HCM Lane LOS	-	-	E	B	-
HCM 95th %tile Q(veh)	-	-	5.7	1.1	-

Intersection	
Int Delay, s/veh	6.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	208	626	12	327	745
Future Vol, veh/h	5	208	626	12	327	745
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	86	86	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	6	242	673	13	352	801

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2185	680	0	0	686	0
Stage 1	680	-	-	-	-	-
Stage 2	1505	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	51	454	-	-	917	-
Stage 1	507	-	-	-	-	-
Stage 2	205	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	31	454	-	-	917	-
Mov Cap-2 Maneuver	31	-	-	-	-	-
Stage 1	507	-	-	-	-	-
Stage 2	126	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	38.3	0	3.5
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	344	917	-
HCM Lane V/C Ratio	-	-	0.72	0.383	-
HCM Control Delay (s)	-	-	38.3	11.3	-
HCM Lane LOS	-	-	E	B	-
HCM 95th %tile Q(veh)	-	-	5.3	1.8	-

Intersection	
Int Delay, s/veh	5.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	177	587	17	262	574
Future Vol, veh/h	7	177	587	17	262	574
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	92	92	89	89
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	9	216	638	18	294	645

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1880	647	0	0	656	0
Stage 1	647	-	-	-	-	-
Stage 2	1233	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	79	475	-	-	941	-
Stage 1	525	-	-	-	-	-
Stage 2	278	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	54	475	-	-	941	-
Mov Cap-2 Maneuver	54	-	-	-	-	-
Stage 1	525	-	-	-	-	-
Stage 2	191	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	29.2	0	3.3
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	366	941	-
HCM Lane V/C Ratio	-	-	0.613	0.313	-
HCM Control Delay (s)	-	-	29.2	10.6	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	3.9	1.3	-

Oak Street at Pine Street

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	93	134	1	113	196	1
Future Vol, veh/h	93	134	1	113	196	1
Peak Hour Factor	0.76	0.76	0.71	0.71	0.91	0.91
Heavy Vehicles, %	0	1	0	0	1	0
Mvmt Flow	122	176	1	159	215	1
Number of Lanes	1	0	0	1	1	0

Approach	SE	NW	NE
Opposing Approach	NW	SE	
Opposing Lanes	1	1	0
Conflicting Approach Left		NE	SE
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NE		NW
Conflicting Lanes Right	1	0	1
HCM Control Delay	9.8	9.2	10.5
HCM LOS	A	A	B

Lane	NELn1	NWLn1	SELn1
Vol Left, %	99%	1%	0%
Vol Thru, %	0%	99%	41%
Vol Right, %	1%	0%	59%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	197	114	227
LT Vol	196	1	0
Through Vol	0	113	93
RT Vol	1	0	134
Lane Flow Rate	216	161	299
Geometry Grp	1	1	1
Degree of Util (X)	0.308	0.214	0.358
Departure Headway (Hd)	5.119	4.803	4.316
Convergence, Y/N	Yes	Yes	Yes
Cap	699	743	830
Service Time	3.18	2.854	2.357
HCM Lane V/C Ratio	0.309	0.217	0.36
HCM Control Delay	10.5	9.2	9.8
HCM Lane LOS	B	A	A
HCM 95th-tile Q	1.3	0.8	1.6

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	167	5	123	251	4	112
Future Vol, veh/h	167	5	123	251	4	112
Peak Hour Factor	0.94	0.94	0.95	0.95	0.76	0.76
Heavy Vehicles, %	1	0	0	0	0	0
Mvmt Flow	178	5	129	264	5	147
Number of Lanes	1	0	1	0	0	1

Approach	NB	SE	NW
Opposing Approach		NW	SE
Opposing Lanes	0	1	1
Conflicting Approach Left	SE		NB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	NW	NB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	10.3	10.7	9.1
HCM LOS	B	B	A

Lane	NBLn1	NWLn1	SELn1
Vol Left, %	97%	3%	0%
Vol Thru, %	0%	97%	33%
Vol Right, %	3%	0%	67%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	172	116	374
LT Vol	167	4	0
Through Vol	0	112	123
RT Vol	5	0	251
Lane Flow Rate	183	153	394
Geometry Grp	1	1	1
Degree of Util (X)	0.267	0.204	0.457
Departure Headway (Hd)	5.258	4.816	4.179
Convergence, Y/N	Yes	Yes	Yes
Cap	679	742	862
Service Time	3.323	2.866	2.214
HCM Lane V/C Ratio	0.27	0.206	0.457
HCM Control Delay	10.3	9.1	10.7
HCM Lane LOS	B	A	B
HCM 95th-tile Q	1.1	0.8	2.4

Intersection	
Intersection Delay, s/veh	11.6
Intersection LOS	B

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	176	5	144	218	3	72
Future Vol, veh/h	176	5	144	218	3	72
Peak Hour Factor	0.89	0.89	0.75	0.75	0.94	0.94
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	198	6	192	291	3	77
Number of Lanes	1	0	1	0	0	1

Approach	NB	SE	NW
Opposing Approach		NW	SE
Opposing Lanes	0	1	1
Conflicting Approach Left	SE		NB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	NW	NB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	10.6	12.5	8.7
HCM LOS	B	B	A

Lane	NBLn1	NWLn1	SELn1
Vol Left, %	97%	4%	0%
Vol Thru, %	0%	96%	40%
Vol Right, %	3%	0%	60%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	181	75	362
LT Vol	176	3	0
Through Vol	0	72	144
RT Vol	5	0	218
Lane Flow Rate	203	80	483
Geometry Grp	1	1	1
Degree of Util (X)	0.298	0.11	0.562
Departure Headway (Hd)	5.281	4.975	4.195
Convergence, Y/N	Yes	Yes	Yes
Cap	675	716	859
Service Time	3.35	3.035	2.229
HCM Lane V/C Ratio	0.301	0.112	0.562
HCM Control Delay	10.6	8.7	12.5
HCM Lane LOS	B	A	B
HCM 95th-tile Q	1.2	0.4	3.6

Ralph Talbot Street at Pine Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	8	453	42	48	275	28	21	107	6	47	161	143
Future Volume (vph)	8	453	42	48	275	28	21	107	6	47	161	143
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.989			0.994			0.945	
Flt Protected		0.999			0.993			0.992			0.993	
Satd. Flow (prot)	0	1923	0	0	1878	0	0	1797	0	0	1709	0
Flt Permitted		0.992			0.878			0.910			0.939	
Satd. Flow (perm)	0	1909	0	0	1660	0	0	1648	0	0	1616	0
Satd. Flow (RTOR)		7			7			2			31	
Adj. Flow (vph)	9	492	46	51	293	30	26	134	8	55	187	166
Lane Group Flow (vph)	0	547	0	0	374	0	0	168	0	0	408	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6			2		
Detector Phase	4	4		8	8		6	6		2	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	59.0	59.0		59.0	59.0		26.0	26.0		26.0	26.0	
Total Split (%)	57.8%	57.8%		57.8%	57.8%		25.5%	25.5%		25.5%	25.5%	
Maximum Green (s)	53.0	53.0		53.0	53.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0			-2.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.69			0.54			0.25			0.61	
Control Delay		19.1			16.1			17.4			22.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		19.1			16.1			17.4			22.4	
Queue Length 50th (ft)		126			79			31			83	
Queue Length 95th (ft)		322			212			118			#360	
Internal Link Dist (ft)		2070			776			467			166	
Turn Bay Length (ft)												
Base Capacity (vph)		1767			1537			663			668	
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		0.31			0.24			0.25			0.61	

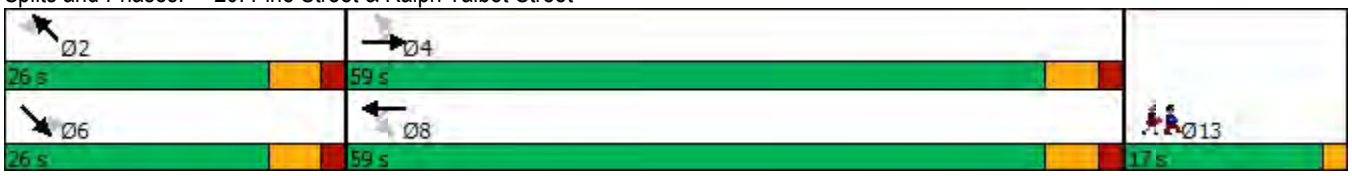
Intersection Summary
Cycle Length: 102

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	17%
Maximum Green (s)	15.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	8.0
Flash Dont Walk (s)	7.0
Pedestrian Calls (#/hr)	6
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 57.7
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 20: Pine Street & Ralph Talbot Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	8	453	42	48	275	28	21	107	6	47	161	143
Future Volume (vph)	8	453	42	48	275	28	21	107	6	47	161	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	11	11	11	11	11	11
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.99			0.95	
Flt Protected		1.00			0.99			0.99			0.99	
Satd. Flow (prot)		1922			1879			1797			1709	
Flt Permitted		0.99			0.88			0.91			0.94	
Satd. Flow (perm)		1909			1661			1647			1616	
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.80	0.80	0.80	0.86	0.86	0.86
Adj. Flow (vph)	9	492	46	51	293	30	26	134	8	55	187	166
RTOR Reduction (vph)	0	4	0	0	4	0	0	1	0	0	19	0
Lane Group Flow (vph)	0	543	0	0	370	0	0	167	0	0	389	0
Heavy Vehicles (%)	0%	1%	0%	0%	3%	4%	0%	1%	0%	0%	1%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		21.7			21.7			21.1			21.1	
Effective Green, g (s)		23.7			23.7			23.1			23.1	
Actuated g/C Ratio		0.40			0.40			0.39			0.39	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		769			669			647			634	
v/s Ratio Prot												
v/s Ratio Perm		c0.28			0.22			0.10			c0.24	
v/c Ratio		0.71			0.55			0.26			0.61	
Uniform Delay, d1		14.6			13.5			12.1			14.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.0			1.0			0.2			1.8	
Delay (s)		17.6			14.5			12.3			16.1	
Level of Service		B			B			B			B	
Approach Delay (s)		17.6			14.5			12.3			16.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	58.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	13	497	68	121	470	19	38	207	18	37	143	119
Future Volume (vph)	13	497	68	121	470	19	38	207	18	37	143	119
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.996			0.991			0.946	
Flt Protected		0.999			0.990			0.993			0.994	
Satd. Flow (prot)	0	1930	0	0	1936	0	0	1807	0	0	1720	0
Flt Permitted		0.982			0.764			0.843			0.899	
Satd. Flow (perm)	0	1897	0	0	1494	0	0	1534	0	0	1556	0
Satd. Flow (RTOR)		10			2			3			30	
Adj. Flow (vph)	14	540	74	146	566	23	38	207	18	40	154	128
Lane Group Flow (vph)	0	628	0	0	735	0	0	263	0	0	322	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6			2		
Detector Phase	4	4		8	8		6	6		2	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	59.0	59.0		59.0	59.0		26.0	26.0		26.0	26.0	
Total Split (%)	57.8%	57.8%		57.8%	57.8%		25.5%	25.5%		25.5%	25.5%	
Maximum Green (s)	53.0	53.0		53.0	53.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0			-2.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.53			0.79			0.68			0.78	
Control Delay		12.2			21.7			40.9			43.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		12.2			21.7			40.9			43.5	
Queue Length 50th (ft)		153			241			124			144	
Queue Length 95th (ft)		377			#581			#289			#350	
Internal Link Dist (ft)		2070			776			467			166	
Turn Bay Length (ft)												
Base Capacity (vph)		1212			952			393			418	
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		0.52			0.77			0.67			0.77	

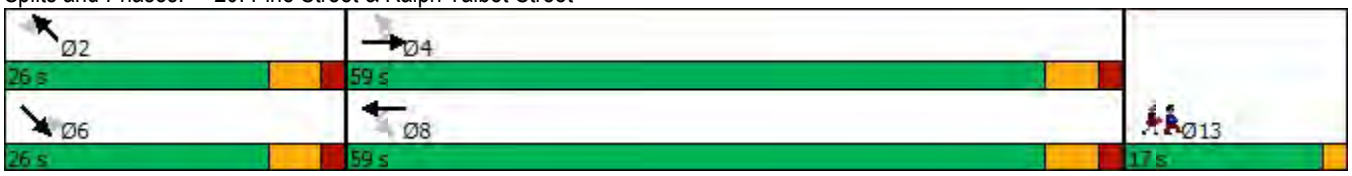
Intersection Summary
Cycle Length: 102

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	17%
Maximum Green (s)	15.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	8.0
Flash Dont Walk (s)	7.0
Pedestrian Calls (#/hr)	5
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 87
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 20: Pine Street & Ralph Talbot Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	13	497	68	121	470	19	38	207	18	37	143	119
Future Volume (vph)	13	497	68	121	470	19	38	207	18	37	143	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	11	11	11	11	11	11
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			1.00			0.99			0.95	
Flt Protected		1.00			0.99			0.99			0.99	
Satd. Flow (prot)		1930			1936			1807			1721	
Flt Permitted		0.98			0.76			0.84			0.90	
Satd. Flow (perm)		1897			1493			1535			1556	
Peak-hour factor, PHF	0.92	0.92	0.92	0.83	0.83	0.83	1.00	1.00	1.00	0.93	0.93	0.93
Adj. Flow (vph)	14	540	74	146	566	23	38	207	18	40	154	128
RTOR Reduction (vph)	0	4	0	0	1	0	0	2	0	0	23	0
Lane Group Flow (vph)	0	624	0	0	734	0	0	261	0	0	299	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		52.1			52.1			19.9			19.9	
Effective Green, g (s)		54.1			54.1			21.9			21.9	
Actuated g/C Ratio		0.61			0.61			0.25			0.25	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1158			911			379			384	
v/s Ratio Prot												
v/s Ratio Perm		0.33			c0.49			0.17			c0.19	
v/c Ratio		0.54			0.81			0.69			0.78	
Uniform Delay, d1		10.0			13.2			30.3			31.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.5			5.3			5.1			9.6	
Delay (s)		10.5			18.5			35.4			40.7	
Level of Service		B			B			D			D	
Approach Delay (s)		10.5			18.5			35.4			40.7	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	88.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	95.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	15	707	44	59	328	19	39	132	22	30	113	58
Future Volume (vph)	15	707	44	59	328	19	39	132	22	30	113	58
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.994			0.985			0.961	
Flt Protected		0.999			0.993			0.990			0.993	
Satd. Flow (prot)	0	1946	0	0	1922	0	0	1791	0	0	1753	0
Flt Permitted		0.989			0.833			0.905			0.937	
Satd. Flow (perm)	0	1926	0	0	1613	0	0	1637	0	0	1654	0
Satd. Flow (RTOR)		5			4			6			18	
Adj. Flow (vph)	16	768	48	65	360	21	44	150	25	33	124	64
Lane Group Flow (vph)	0	832	0	0	446	0	0	219	0	0	221	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6			2		
Detector Phase	4	4		8	8		6	6		2	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	59.0	59.0		59.0	59.0		26.0	26.0		26.0	26.0	
Total Split (%)	57.8%	57.8%		57.8%	57.8%		25.5%	25.5%		25.5%	25.5%	
Maximum Green (s)	53.0	53.0		53.0	53.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0			-2.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.77			0.49			0.49			0.48	
Control Delay		18.4			12.1			28.0			26.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		18.4			12.1			28.0			26.3	
Queue Length 50th (ft)		200			84			64			60	
Queue Length 95th (ft)		594			261			200			198	
Internal Link Dist (ft)		2070			776			467			166	
Turn Bay Length (ft)												
Base Capacity (vph)		1618			1355			614			628	
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		0.51			0.33			0.36			0.35	

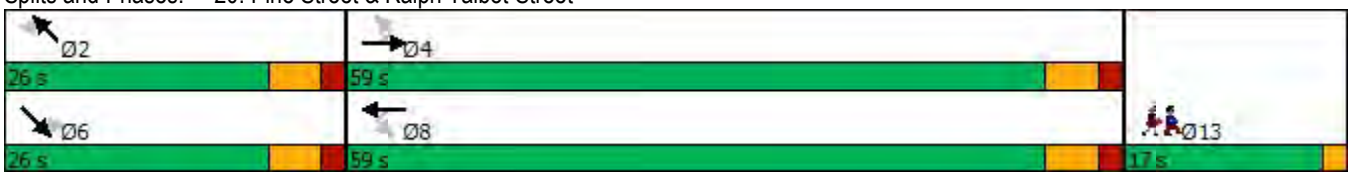
Intersection Summary
Cycle Length: 102

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	17%
Maximum Green (s)	15.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	8.0
Flash Dont Walk (s)	7.0
Pedestrian Calls (#/hr)	1
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 65.2
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 20: Pine Street & Ralph Talbot Street

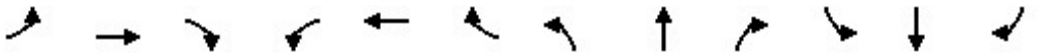


Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	15	707	44	59	328	19	39	132	22	30	113	58
Future Volume (vph)	15	707	44	59	328	19	39	132	22	30	113	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	11	11	11	11	11	11
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.98			0.96	
Flt Protected		1.00			0.99			0.99			0.99	
Satd. Flow (prot)		1946			1921			1790			1752	
Flt Permitted		0.99			0.83			0.90			0.94	
Satd. Flow (perm)		1928			1613			1636			1654	
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.88	0.88	0.88	0.91	0.91	0.91
Adj. Flow (vph)	16	768	48	65	360	21	44	150	25	33	124	64
RTOR Reduction (vph)	0	2	0	0	2	0	0	4	0	0	13	0
Lane Group Flow (vph)	0	830	0	0	444	0	0	215	0	0	208	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		34.2			34.2			15.6			15.6	
Effective Green, g (s)		36.2			36.2			17.6			17.6	
Actuated g/C Ratio		0.55			0.55			0.27			0.27	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1062			888			438			443	
v/s Ratio Prot												
v/s Ratio Perm		c0.43			0.28			c0.13			0.13	
v/c Ratio		0.78			0.50			0.49			0.47	
Uniform Delay, d1		11.6			9.1			20.3			20.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.8			0.4			0.9			0.8	
Delay (s)		15.4			9.6			21.1			20.9	
Level of Service		B			A			C			C	
Approach Delay (s)		15.4			9.6			21.1			20.9	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Derby Street at Pond Park Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	565	138	299	381	30	43	0	101	7	2	1
Future Volume (vph)	13	565	138	299	381	30	43	0	101	7	2	1
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.971			0.989				0.850			0.850
Flt Protected		0.999		0.950				0.950			0.963	
Satd. Flow (prot)	0	3326	0	1652	1845	0	0	1719	1432	0	2013	1723
Flt Permitted		0.946		0.329				0.746			0.748	
Satd. Flow (perm)	0	3150	0	572	1845	0	0	1350	1432	0	1563	1723
Satd. Flow (RTOR)		45			4				135			104
Adj. Flow (vph)	15	657	160	318	405	32	57	0	135	14	4	2
Lane Group Flow (vph)	0	832	0	318	437	0	0	57	135	0	18	2
Turn Type	Prot	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases				8			2		2	6		6
Detector Phase	7	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	12.0		12.0	12.0		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	23.0	52.0		29.0	29.0		16.0	16.0	16.0	16.0	16.0	16.0
Total Split (%)	24.5%	55.3%		30.9%	30.9%		17.0%	17.0%	17.0%	17.0%	17.0%	17.0%
Maximum Green (s)	19.0	46.0		23.0	23.0		10.0	10.0	10.0	10.0	10.0	10.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-2.0		-2.0	-2.0			-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		3.56dr		0.73	0.31			0.22	0.36		0.06	0.00
Control Delay		15.0		20.4	4.1			26.2	8.5		24.0	0.0
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay		15.0		20.4	4.1			26.2	8.5		24.0	0.0
Queue Length 50th (ft)		88		60	48			19	0		6	0
Queue Length 95th (ft)		#245		#246	90			42	26		12	0
Internal Link Dist (ft)		1811			610			108			571	
Turn Bay Length (ft)				275					185			30
Base Capacity (vph)		1123		434	1401			323	445		374	491
Starvation Cap Reductn		0		0	0			0	0		0	0
Spillback Cap Reductn		0		0	0			0	0		0	0
Storage Cap Reductn		0		0	0			0	0		0	0
Reduced v/c Ratio		0.74		0.73	0.31			0.18	0.30		0.05	0.00

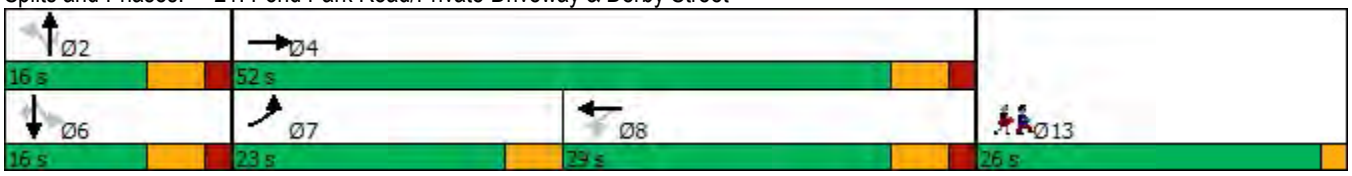
Intersection Summary
Cycle Length: 94

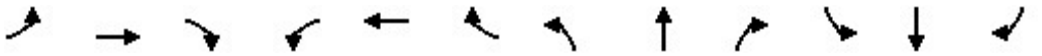
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	28%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	17.0
Pedestrian Calls (#/hr)	0
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 55.6
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 21: Pond Park Road/Private Driveway & Derby Street



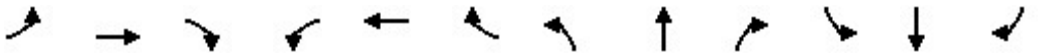


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	565	138	299	381	30	43	0	101	7	2	1
Future Volume (vph)	13	565	138	299	381	30	43	0	101	7	2	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	10	12	12	12	12	11	15	15	14
Total Lost time (s)		4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor		0.95		1.00	1.00			1.00	1.00		1.00	1.00
Frt		0.97		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected		1.00		0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (prot)		3327		1652	1845			1719	1432		2012	1723
Flt Permitted		0.95		0.33	1.00			0.75	1.00		0.75	1.00
Satd. Flow (perm)		3152		571	1845			1349	1432		1564	1723
Peak-hour factor, PHF	0.86	0.86	0.86	0.94	0.94	0.94	0.75	0.75	0.75	0.50	0.50	0.50
Adj. Flow (vph)	15	657	160	318	405	32	57	0	135	14	4	2
RTOR Reduction (vph)	0	13	0	0	1	0	0	0	116	0	0	2
Lane Group Flow (vph)	0	819	0	318	436	0	0	57	19	0	18	0
Heavy Vehicles (%)	0%	2%	1%	2%	2%	0%	5%	0%	9%	0%	0%	0%
Turn Type	Prot	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases				8			2		2	6		6
Actuated Green, G (s)		38.4		38.4	38.4			6.1	6.1		6.1	6.1
Effective Green, g (s)		40.4		40.4	40.4			8.1	8.1		8.1	8.1
Actuated g/C Ratio		0.72		0.72	0.72			0.14	0.14		0.14	0.14
Clearance Time (s)		6.0		6.0	6.0			6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2253		408	1319			193	205		224	247
v/s Ratio Prot					0.24							
v/s Ratio Perm		0.26		c0.56				c0.04	0.01		0.01	0.00
v/c Ratio		3.56dr		0.78	0.33			0.30	0.09		0.08	0.00
Uniform Delay, d1		3.1		5.2	3.0			21.6	21.0		21.0	20.7
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1		9.1	0.1			0.9	0.2		0.2	0.0
Delay (s)		3.2		14.3	3.2			22.5	21.2		21.1	20.7
Level of Service		A		B	A			C	C		C	C
Approach Delay (s)		3.2			7.8			21.6			21.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	56.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

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

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	749	32	47	594	14	161	1	246	43	3	12
Future Volume (vph)	4	749	32	47	594	14	161	1	246	43	3	12
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.997				0.850			0.850
Flt Protected				0.950				0.953			0.955	
Satd. Flow (prot)	0	3459	0	1518	1894	0	0	1793	1561	0	1955	1723
Flt Permitted		0.953		0.293				0.669			0.408	
Satd. Flow (perm)	0	3296	0	468	1894	0	0	1259	1561	0	835	1723
Satd. Flow (RTOR)		7			1				351			104
Adj. Flow (vph)	4	814	35	51	646	15	230	1	351	74	5	21
Lane Group Flow (vph)	0	853	0	51	661	0	0	231	351	0	79	21
Turn Type	Prot	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases				8			2		2	6		6
Detector Phase	7	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	12.0		12.0	12.0		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	23.0	52.0		29.0	29.0		16.0	16.0	16.0	16.0	16.0	16.0
Total Split (%)	24.5%	55.3%		30.9%	30.9%		17.0%	17.0%	17.0%	17.0%	17.0%	17.0%
Maximum Green (s)	19.0	46.0		23.0	23.0		10.0	10.0	10.0	10.0	10.0	10.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-2.0		-2.0	-2.0			-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		5.00dr		0.18	0.57			0.94	0.60		0.48	0.05
Control Delay		30.1		9.6	11.3			77.3	9.1		42.4	0.2
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay		30.1		9.6	11.3			77.3	9.1		42.4	0.2
Queue Length 50th (ft)		100		6	99			87	0		27	0
Queue Length 95th (ft)		#431		41	411			#237	15		59	0
Internal Link Dist (ft)		1811			610			108			571	
Turn Bay Length (ft)				275					185			30
Base Capacity (vph)		1161		288	1169			247	588		164	421
Starvation Cap Reductn		0		0	0			0	0		0	0
Spillback Cap Reductn		0		0	0			0	0		0	0
Storage Cap Reductn		0		0	0			0	0		0	0
Reduced v/c Ratio		0.73		0.18	0.57			0.94	0.60		0.48	0.05

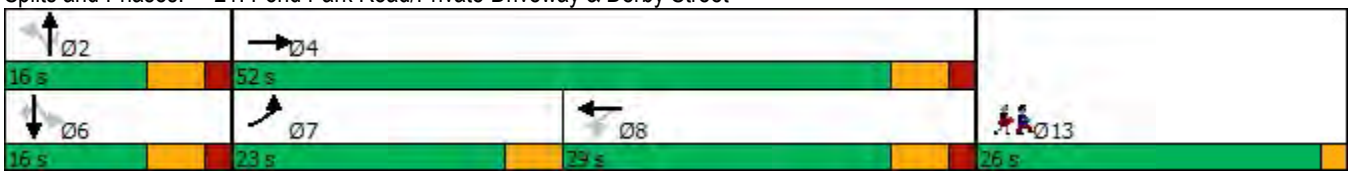
Intersection Summary
Cycle Length: 94

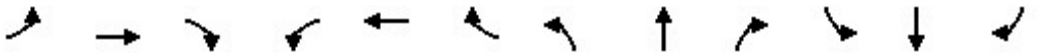
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	28%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	17.0
Pedestrian Calls (#/hr)	1
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 64.8
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 21: Pond Park Road/Private Driveway & Derby Street



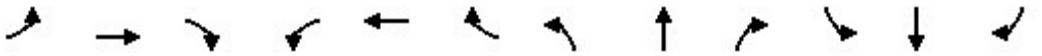


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	749	32	47	594	14	161	1	246	43	3	12
Future Volume (vph)	4	749	32	47	594	14	161	1	246	43	3	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	10	12	12	12	12	11	15	15	14
Total Lost time (s)		4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor		0.95		1.00	1.00			1.00	1.00		1.00	1.00
Frt		0.99		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected		1.00		0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (prot)		3457		1518	1894			1792	1561		1956	1723
Flt Permitted		0.95		0.29	1.00			0.67	1.00		0.41	1.00
Satd. Flow (perm)		3295		469	1894			1259	1561		835	1723
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.70	0.70	0.70	0.58	0.58	0.58
Adj. Flow (vph)	4	814	35	51	646	15	230	1	351	74	5	21
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	284	0	0	17
Lane Group Flow (vph)	0	850	0	51	661	0	0	231	67	0	79	4
Heavy Vehicles (%)	9%	0%	6%	11%	0%	0%	1%	0%	0%	0%	33%	0%
Turn Type	Prot	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases				8			2		2	6		6
Actuated Green, G (s)		37.9		37.9	37.9			10.6	10.6		10.6	10.6
Effective Green, g (s)		39.9		39.9	39.9			12.6	12.6		12.6	12.6
Actuated g/C Ratio		0.61		0.61	0.61			0.19	0.19		0.19	0.19
Clearance Time (s)		6.0		6.0	6.0			6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1998		284	1148			241	298		159	329
v/s Ratio Prot					c0.35							
v/s Ratio Perm		0.26		0.11				c0.18	0.04		0.09	0.00
v/c Ratio		5.00dr		0.18	0.58			0.96	0.23		0.50	0.01
Uniform Delay, d1		6.9		5.7	7.8			26.3	22.5		23.8	21.6
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1		0.3	0.7			45.9	0.4		2.4	0.0
Delay (s)		7.0		6.0	8.5			72.2	22.9		26.2	21.6
Level of Service		A		A	A			E	C		C	C
Approach Delay (s)		7.0			8.4			42.5			25.2	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	65.8	Sum of lost time (s)	14.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

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

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	949	8	18	470	8	11	0	23	6	0	1
Future Volume (vph)	1	949	8	18	470	8	11	0	23	6	0	1
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.998				0.850			0.850
Flt Protected				0.950				0.950			0.950	
Satd. Flow (prot)	0	3486	0	1589	1896	0	0	1805	1501	0	1986	1723
Flt Permitted		0.955		0.277				0.976			0.976	
Satd. Flow (perm)	0	3329	0	463	1896	0	0	1854	1501	0	2040	1723
Satd. Flow (RTOR)		1			1				104			104
Adj. Flow (vph)	1	999	8	20	534	9	13	0	27	10	0	2
Lane Group Flow (vph)	0	1008	0	20	543	0	0	13	27	0	10	2
Turn Type	Prot	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases				8			2		2	6		6
Detector Phase	7	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	12.0		12.0	12.0		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	23.0	52.0		29.0	29.0		16.0	16.0	16.0	16.0	16.0	16.0
Total Split (%)	24.5%	55.3%		30.9%	30.9%		17.0%	17.0%	17.0%	17.0%	17.0%	17.0%
Maximum Green (s)	19.0	46.0		23.0	23.0		10.0	10.0	10.0	10.0	10.0	10.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-2.0		-2.0	-2.0			-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)		4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		8.00dl		0.05	0.32			0.04	0.07		0.03	0.01
Control Delay		9.7		2.3	2.4			24.0	0.4		23.8	0.0
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay		9.7		2.3	2.4			24.0	0.4		23.8	0.0
Queue Length 50th (ft)		0		0	0			4	0		3	0
Queue Length 95th (ft)		#313		6	93			17	0		10	0
Internal Link Dist (ft)		1811			610			108			571	
Turn Bay Length (ft)				275					185			30
Base Capacity (vph)		1370		415	1698			513	490		564	552
Starvation Cap Reductn		0		0	0			0	0		0	0
Spillback Cap Reductn		0		0	0			0	0		0	0
Storage Cap Reductn		0		0	0			0	0		0	0
Reduced v/c Ratio		0.74		0.05	0.32			0.03	0.06		0.02	0.00

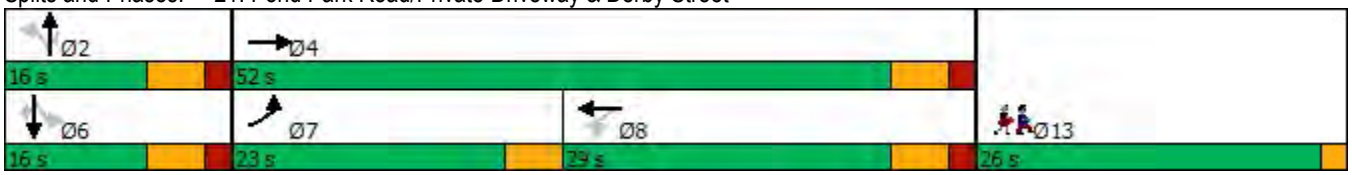
Intersection Summary
Cycle Length: 94

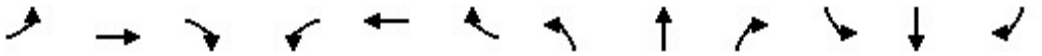
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	28%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	17.0
Pedestrian Calls (#/hr)	0
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 48.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 21: Pond Park Road/Private Driveway & Derby Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	949	8	18	470	8	11	0	23	6	0	1
Future Volume (vph)	1	949	8	18	470	8	11	0	23	6	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	10	12	12	12	12	11	15	15	14
Total Lost time (s)		4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor		0.95		1.00	1.00			1.00	1.00		1.00	1.00
Frt		1.00		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected		1.00		0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (prot)		3485		1589	1895			1805	1501		1986	1723
Flt Permitted		0.95		0.28	1.00			0.98	1.00		0.98	1.00
Satd. Flow (perm)		3328		463	1895			1854	1501		2039	1723
Peak-hour factor, PHF	0.95	0.95	0.95	0.88	0.88	0.88	0.85	0.85	0.85	0.58	0.58	0.58
Adj. Flow (vph)	1	999	8	20	534	9	13	0	27	10	0	2
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	25	0	0	2
Lane Group Flow (vph)	0	1008	0	20	543	0	0	13	2	0	10	0
Heavy Vehicles (%)	0%	0%	0%	6%	0%	0%	0%	0%	4%	0%	0%	0%
Turn Type	Prot	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases				8			2		2	6		6
Actuated Green, G (s)		38.0		38.0	38.0			2.1	2.1		2.1	2.1
Effective Green, g (s)		40.0		40.0	40.0			4.1	4.1		4.1	4.1
Actuated g/C Ratio		0.77		0.77	0.77			0.08	0.08		0.08	0.08
Clearance Time (s)		6.0		6.0	6.0			6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2555		355	1454			145	118		160	135
v/s Ratio Prot					0.29							
v/s Ratio Perm		c0.30		0.04				c0.01	0.00		0.00	0.00
v/c Ratio		8.00dl		0.06	0.37			0.09	0.02		0.06	0.00
Uniform Delay, d1		2.0		1.5	2.0			22.3	22.1		22.2	22.1
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1		0.1	0.2			0.3	0.1		0.2	0.0
Delay (s)		2.1		1.5	2.1			22.5	22.2		22.4	22.1
Level of Service		A		A	A			C	C		C	C
Approach Delay (s)		2.1			2.1			22.3			22.3	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	2.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	52.1	Sum of lost time (s)	14.0
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

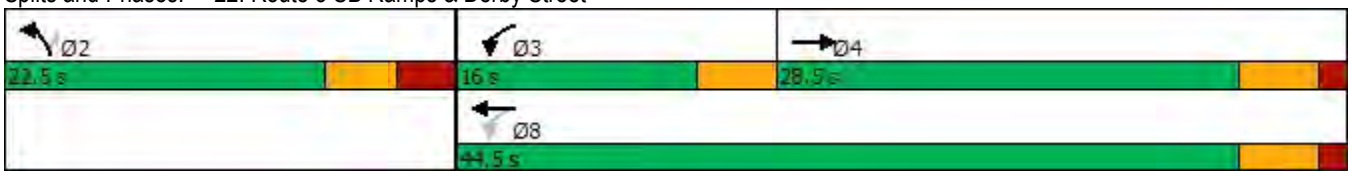
dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Derby Street at the Route 3 Southbound Ramps

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	390	283	114	570	140	400
Future Volume (vph)	390	283	114	570	140	400
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	0.88
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3421	1812	1770	1881	1967	2944
Flt Permitted			0.370		0.950	
Satd. Flow (perm)	3421	1812	689	1881	1967	2944
Satd. Flow (RTOR)		311				
Adj. Flow (vph)	429	311	123	613	143	408
Lane Group Flow (vph)	429	311	123	613	143	408
Turn Type	NA	Free	pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		Free	8			2
Detector Phase	4		3	8	2	2
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		10.0	22.5	22.5	22.5
Total Split (s)	28.5		16.0	44.5	22.5	22.5
Total Split (%)	42.5%		23.9%	66.4%	33.6%	33.6%
Maximum Green (s)	23.0		12.0	39.0	16.0	16.0
Yellow Time (s)	4.0		4.0	4.0	3.5	3.5
All-Red Time (s)	1.5		0.0	1.5	3.0	3.0
Lost Time Adjust (s)	-1.5		0.0	-1.5	-2.5	-2.5
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	None	None	None
v/c Ratio	0.39	0.17	0.24	0.64	0.24	0.45
Control Delay	14.8	0.2	7.2	11.8	15.2	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	0.2	7.2	11.8	15.2	16.1
Queue Length 50th (ft)	48	0	15	101	28	48
Queue Length 95th (ft)	93	0	39	213	79	108
Internal Link Dist (ft)	610			510	658	
Turn Bay Length (ft)					200	200
Base Capacity (vph)	1898	1812	645	1614	824	1233
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	0.23	0.17	0.19	0.38	0.17	0.33

Intersection Summary
Cycle Length: 67
Actuated Cycle Length: 46.4
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

Splits and Phases: 22: Route 3 SB Ramps & Derby Street





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	390	283	114	570	140	400
Future Volume (vph)	390	283	114	570	140	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	16	12	12	16	14
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	0.88
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3421	1812	1770	1881	1967	2944
Flt Permitted	1.00	1.00	0.37	1.00	0.95	1.00
Satd. Flow (perm)	3421	1812	689	1881	1967	2944
Peak-hour factor, PHF	0.91	0.91	0.93	0.93	0.98	0.98
Adj. Flow (vph)	429	311	123	613	143	408
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	429	311	123	613	143	408
Heavy Vehicles (%)	2%	1%	2%	1%	4%	3%
Turn Type	NA	Free	pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		Free	8			2
Actuated Green, G (s)	13.4	46.8	23.1	23.1	11.7	11.7
Effective Green, g (s)	14.9	46.8	23.1	24.6	14.2	14.2
Actuated g/C Ratio	0.32	1.00	0.49	0.53	0.30	0.30
Clearance Time (s)	5.5		4.0	5.5	6.5	6.5
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1089	1812	471	988	596	893
v/s Ratio Prot	0.13		0.03	c0.33	0.07	
v/s Ratio Perm		0.17	0.10			c0.14
v/c Ratio	0.39	0.17	0.26	0.62	0.24	0.46
Uniform Delay, d1	12.4	0.0	6.7	7.8	12.2	13.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.2	0.3	1.2	0.2	0.4
Delay (s)	12.7	0.2	7.0	9.0	12.5	13.6
Level of Service	B	A	A	A	B	B
Approach Delay (s)	7.4			8.7	13.3	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	46.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

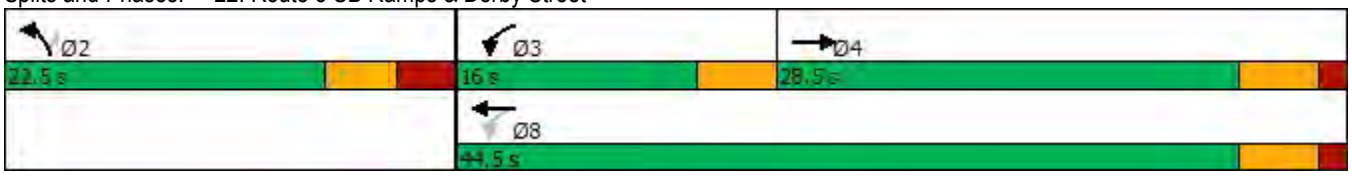
c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	558	480	269	586	69	509
Future Volume (vph)	558	480	269	586	69	509
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.88
Frt	0.931					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3249	0	1787	1900	1912	3002
Flt Permitted			0.156		0.950	
Satd. Flow (perm)	3249	0	293	1900	1912	3002
Satd. Flow (RTOR)	364					
Adj. Flow (vph)	620	533	283	617	80	592
Lane Group Flow (vph)	1153	0	283	617	80	592
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases			8			2
Detector Phase	4		3	8	2	2
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		10.0	22.5	22.5	22.5
Total Split (s)	28.5		16.0	44.5	22.5	22.5
Total Split (%)	42.5%		23.9%	66.4%	33.6%	33.6%
Maximum Green (s)	23.0		12.0	39.0	16.0	16.0
Yellow Time (s)	4.0		4.0	4.0	3.5	3.5
All-Red Time (s)	1.5		0.0	1.5	3.0	3.0
Lost Time Adjust (s)	-1.5		0.0	-1.5	-2.5	-2.5
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	None	None	None
v/c Ratio	0.81		0.69	0.55	0.15	0.71
Control Delay	17.9		18.5	10.0	19.0	26.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	17.9		18.5	10.0	19.0	26.5
Queue Length 50th (ft)	144		48	131	24	119
Queue Length 95th (ft)	231		120	208	52	171
Internal Link Dist (ft)	610			510	658	
Turn Bay Length (ft)					200	200
Base Capacity (vph)	1501		462	1238	569	894
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.77		0.61	0.50	0.14	0.66

Intersection Summary
Cycle Length: 67
Actuated Cycle Length: 62.8
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

Splits and Phases: 22: Route 3 SB Ramps & Derby Street





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	558	480	269	586	69	509
Future Volume (vph)	558	480	269	586	69	509
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	16	12	12	16	14
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	1.00	1.00	0.88
Frt	0.93		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3248		1787	1900	1912	3002
Flt Permitted	1.00		0.16	1.00	0.95	1.00
Satd. Flow (perm)	3248		294	1900	1912	3002
Peak-hour factor, PHF	0.90	0.90	0.95	0.95	0.86	0.86
Adj. Flow (vph)	620	533	283	617	80	592
RTOR Reduction (vph)	230	0	0	0	0	0
Lane Group Flow (vph)	923	0	283	617	80	592
Heavy Vehicles (%)	0%	0%	1%	0%	7%	1%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases			8			2
Actuated Green, G (s)	21.6		35.7	35.7	14.9	14.9
Effective Green, g (s)	23.1		35.7	37.2	17.4	17.4
Actuated g/C Ratio	0.37		0.57	0.59	0.28	0.28
Clearance Time (s)	5.5		4.0	5.5	6.5	6.5
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1198		408	1129	531	834
v/s Ratio Prot	c0.28		c0.11	0.32	0.04	
v/s Ratio Perm			0.28			c0.20
v/c Ratio	0.77		0.69	0.55	0.15	0.71
Uniform Delay, d1	17.4		10.9	7.6	17.0	20.3
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1		5.0	0.5	0.1	2.8
Delay (s)	20.5		16.0	8.2	17.2	23.1
Level of Service	C		B	A	B	C
Approach Delay (s)	20.5			10.6	22.4	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	62.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

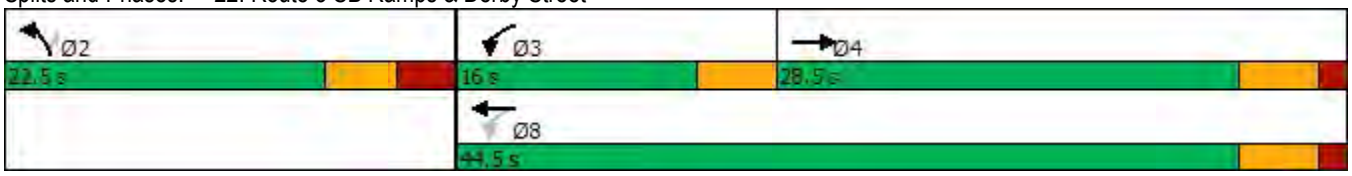
c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	480	498	170	467	29	366
Future Volume (vph)	480	498	170	467	29	366
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.88
Frt	0.924					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3224	0	1787	1900	2046	3002
Flt Permitted			0.173		0.950	
Satd. Flow (perm)	3224	0	325	1900	2046	3002
Satd. Flow (RTOR)	440					
Adj. Flow (vph)	500	519	193	531	35	441
Lane Group Flow (vph)	1019	0	193	531	35	441
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases			8			2
Detector Phase	4		3	8	2	2
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		10.0	22.5	22.5	22.5
Total Split (s)	28.5		16.0	44.5	22.5	22.5
Total Split (%)	42.5%		23.9%	66.4%	33.6%	33.6%
Maximum Green (s)	23.0		12.0	39.0	16.0	16.0
Yellow Time (s)	4.0		4.0	4.0	3.5	3.5
All-Red Time (s)	1.5		0.0	1.5	3.0	3.0
Lost Time Adjust (s)	-1.5		0.0	-1.5	-2.5	-2.5
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	None	None	None
v/c Ratio	0.68		0.47	0.51	0.06	0.50
Control Delay	11.4		9.7	9.3	17.5	20.6
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	11.4		9.7	9.3	17.5	20.6
Queue Length 50th (ft)	81		28	95	9	76
Queue Length 95th (ft)	165		55	162	27	119
Internal Link Dist (ft)	610			510	658	
Turn Bay Length (ft)					200	200
Base Capacity (vph)	1772		522	1402	739	1084
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.58		0.37	0.38	0.05	0.41

Intersection Summary
Cycle Length: 67
Actuated Cycle Length: 55.1
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

Splits and Phases: 22: Route 3 SB Ramps & Derby Street



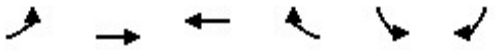


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	480	498	170	467	29	366
Future Volume (vph)	480	498	170	467	29	366
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	16	12	12	16	14
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	1.00	1.00	0.88
Frt	0.92		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3223		1787	1900	2046	3002
Flt Permitted	1.00		0.17	1.00	0.95	1.00
Satd. Flow (perm)	3223		326	1900	2046	3002
Peak-hour factor, PHF	0.96	0.96	0.88	0.88	0.83	0.83
Adj. Flow (vph)	500	519	193	531	35	441
RTOR Reduction (vph)	276	0	0	0	0	0
Lane Group Flow (vph)	743	0	193	531	35	441
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases			8			2
Actuated Green, G (s)	19.1		29.8	29.8	13.4	13.4
Effective Green, g (s)	20.6		29.8	31.3	15.9	15.9
Actuated g/C Ratio	0.37		0.54	0.57	0.29	0.29
Clearance Time (s)	5.5		4.0	5.5	6.5	6.5
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1202		353	1077	589	864
v/s Ratio Prot	c0.23		0.07	c0.28	0.02	
v/s Ratio Perm			0.23			c0.15
v/c Ratio	0.62		0.55	0.49	0.06	0.51
Uniform Delay, d1	14.1		9.0	7.2	14.2	16.4
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0		1.7	0.4	0.0	0.5
Delay (s)	15.1		10.8	7.5	14.3	16.9
Level of Service	B		B	A	B	B
Approach Delay (s)	15.1			8.4	16.7	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	55.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Derby Street at the Route 3 Northbound Ramps

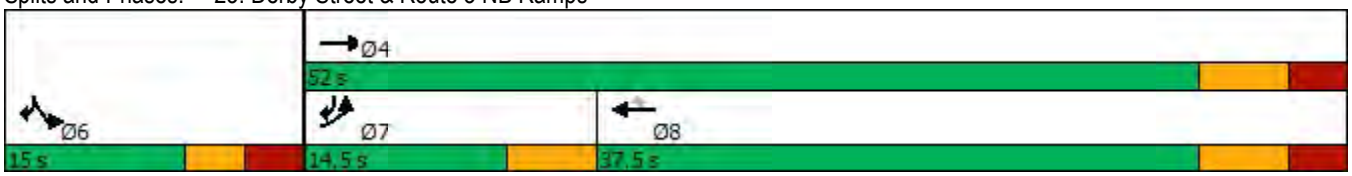


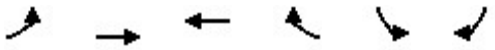
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	72	718	401	522	153	283
Future Volume (vph)	72	718	401	522	153	283
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1646	3421	3455	1531	3583	1794
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1646	3421	3455	1531	3583	1794
Satd. Flow (RTOR)				574		348
Adj. Flow (vph)	80	798	441	574	189	349
Lane Group Flow (vph)	80	798	441	574	189	349
Turn Type	Prot	NA	NA	Perm	Prot	pt+ov
Protected Phases	7	4	8		6	6 7
Permitted Phases				8		
Detector Phase	7	4	8	8	6	6 7
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	12.5	29.5	29.5	29.5	11.0	
Total Split (s)	14.5	52.0	37.5	37.5	15.0	
Total Split (%)	21.6%	77.6%	56.0%	56.0%	22.4%	
Maximum Green (s)	10.0	44.5	30.0	30.0	9.0	
Yellow Time (s)	4.5	4.5	4.5	4.5	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	-0.5	-3.5	-3.5	-3.5	-2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	Min	
Walk Time (s)		6.0	6.0	6.0		
Flash Dont Walk (s)		16.0	16.0	16.0		
Pedestrian Calls (#/hr)		0	0	0		
v/c Ratio	0.30	0.36	0.32	0.60	0.27	0.34
Control Delay	24.6	4.6	11.1	4.1	20.8	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.6	4.6	11.1	4.1	20.8	2.7
Queue Length 50th (ft)	21	45	44	0	24	0
Queue Length 95th (ft)	65	70	77	45	54	29
Internal Link Dist (ft)		516	643		871	
Turn Bay Length (ft)	130			400	170	170
Base Capacity (vph)	352	3119	2357	1226	802	1090
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	0.23	0.26	0.19	0.47	0.24	0.32

Intersection Summary
Cycle Length: 67

Actuated Cycle Length: 50.8
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

Splits and Phases: 23: Derby Street & Route 3 NB Ramps

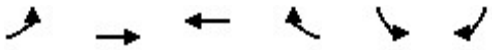




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	72	718	401	522	153	283
Future Volume (vph)	72	718	401	522	153	283
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	13	16
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	2.5
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1646	3421	3455	1531	3583	1794
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1646	3421	3455	1531	3583	1794
Peak-hour factor, PHF	0.90	0.90	0.91	0.91	0.81	0.81
Adj. Flow (vph)	80	798	441	574	189	349
RTOR Reduction (vph)	0	0	0	345	0	174
Lane Group Flow (vph)	80	798	441	229	189	175
Heavy Vehicles (%)	6%	2%	1%	2%	1%	2%
Turn Type	Prot	NA	NA	Perm	Prot	pt+ov
Protected Phases	7	4	8		6	6 7
Permitted Phases				8		
Actuated Green, G (s)	7.8	28.9	16.6	16.6	7.9	21.7
Effective Green, g (s)	8.3	32.4	20.1	20.1	9.9	25.2
Actuated g/C Ratio	0.17	0.64	0.40	0.40	0.20	0.50
Clearance Time (s)	4.5	7.5	7.5	7.5	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	271	2203	1380	611	705	898
v/s Ratio Prot	0.05	c0.23	0.13		c0.05	0.10
v/s Ratio Perm				0.15		
v/c Ratio	0.30	0.36	0.32	0.38	0.27	0.20
Uniform Delay, d1	18.4	4.2	10.4	10.7	17.1	6.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.1	0.1	0.4	0.2	0.1
Delay (s)	19.0	4.3	10.5	11.1	17.3	7.0
Level of Service	B	A	B	B	B	A
Approach Delay (s)		5.6	10.8		10.7	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	50.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

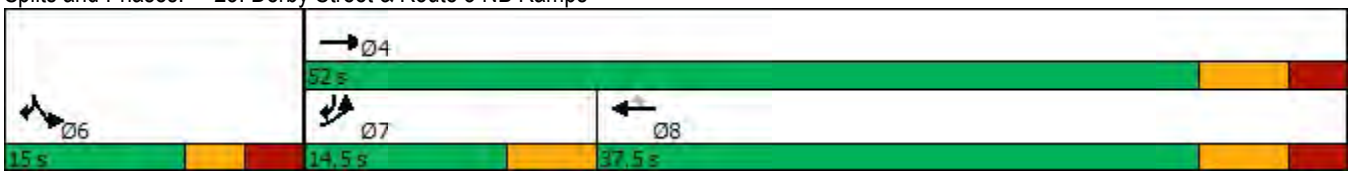


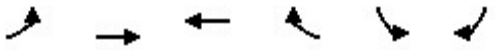
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	150	917	656	617	173	199
Future Volume (vph)	150	917	656	617	173	199
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1728	3455	3490	1561	3583	1812
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1728	3455	3490	1561	3583	1812
Satd. Flow (RTOR)				663		171
Adj. Flow (vph)	152	926	705	663	184	212
Lane Group Flow (vph)	152	926	705	663	184	212
Turn Type	Prot	NA	NA	Perm	Prot	pt+ov
Protected Phases	7	4	8		6	6 7
Permitted Phases				8		
Detector Phase	7	4	8	8	6	6 7
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	12.5	29.5	29.5	29.5	11.0	
Total Split (s)	14.5	52.0	37.5	37.5	15.0	
Total Split (%)	21.6%	77.6%	56.0%	56.0%	22.4%	
Maximum Green (s)	10.0	44.5	30.0	30.0	9.0	
Yellow Time (s)	4.5	4.5	4.5	4.5	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	-0.5	-3.5	-3.5	-3.5	-2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	Min	
Walk Time (s)		6.0	6.0	6.0		
Flash Dont Walk (s)		16.0	16.0	16.0		
Pedestrian Calls (#/hr)		0	0	0		
v/c Ratio	0.54	0.39	0.44	0.62	0.30	0.24
Control Delay	32.7	4.3	11.8	3.8	24.6	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.7	4.3	11.8	3.8	24.6	4.6
Queue Length 50th (ft)	51	57	86	0	30	8
Queue Length 95th (ft)	#113	83	126	47	61	47
Internal Link Dist (ft)		516	643		871	
Turn Bay Length (ft)	130			400	170	170
Base Capacity (vph)	318	2850	2054	1191	692	899
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	0.32	0.34	0.56	0.27	0.24

Intersection Summary
Cycle Length: 67

Actuated Cycle Length: 58.4
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 23: Derby Street & Route 3 NB Ramps

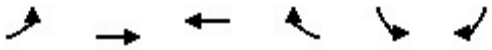




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	150	917	656	617	173	199
Future Volume (vph)	150	917	656	617	173	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	13	16
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	2.5
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1728	3455	3490	1561	3583	1812
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1728	3455	3490	1561	3583	1812
Peak-hour factor, PHF	0.99	0.99	0.93	0.93	0.94	0.94
Adj. Flow (vph)	152	926	705	663	184	212
RTOR Reduction (vph)	0	0	0	359	0	93
Lane Group Flow (vph)	152	926	705	304	184	119
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type	Prot	NA	NA	Perm	Prot	pt+ov
Protected Phases	7	4	8		6	6 7
Permitted Phases				8		
Actuated Green, G (s)	9.0	36.6	23.1	23.1	8.0	23.0
Effective Green, g (s)	9.5	40.1	26.6	26.6	10.0	26.5
Actuated g/C Ratio	0.16	0.69	0.46	0.46	0.17	0.46
Clearance Time (s)	4.5	7.5	7.5	7.5	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	282	2384	1597	714	616	826
v/s Ratio Prot	c0.09	0.27	c0.20		c0.05	0.07
v/s Ratio Perm				0.19		
v/c Ratio	0.54	0.39	0.44	0.43	0.30	0.14
Uniform Delay, d1	22.3	3.8	10.7	10.6	21.0	9.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.1	0.2	0.4	0.3	0.1
Delay (s)	24.3	3.9	10.9	11.0	21.3	9.3
Level of Service	C	A	B	B	C	A
Approach Delay (s)		6.8	11.0		14.8	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	58.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

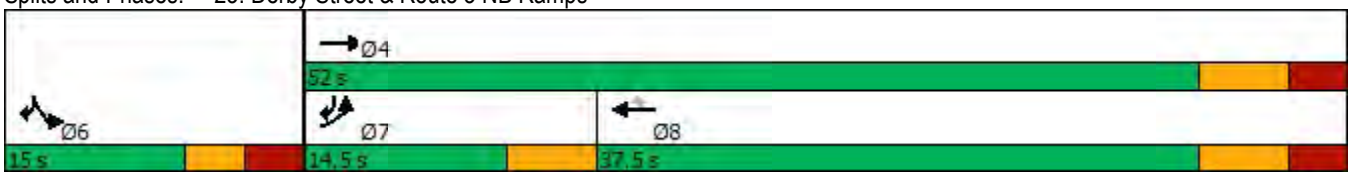


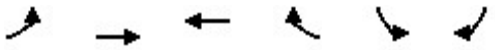
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	59	787	519	638	139	118
Future Volume (vph)	59	787	519	638	139	118
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1745	3490	3490	1561	3618	1812
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1745	3490	3490	1561	3618	1812
Satd. Flow (RTOR)				651		130
Adj. Flow (vph)	64	855	530	651	153	130
Lane Group Flow (vph)	64	855	530	651	153	130
Turn Type	Prot	NA	NA	Perm	Prot	pt+ov
Protected Phases	7	4	8		6	6 7
Permitted Phases				8		
Detector Phase	7	4	8	8	6	6 7
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	12.5	29.5	29.5	29.5	11.0	
Total Split (s)	14.5	52.0	37.5	37.5	15.0	
Total Split (%)	21.6%	77.6%	56.0%	56.0%	22.4%	
Maximum Green (s)	10.0	44.5	30.0	30.0	9.0	
Yellow Time (s)	4.5	4.5	4.5	4.5	3.0	
All-Red Time (s)	0.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	-0.5	-3.5	-3.5	-3.5	-2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	Min	
Walk Time (s)		6.0	6.0	6.0		
Flash Dont Walk (s)		16.0	16.0	16.0		
Pedestrian Calls (#/hr)		0	0	0		
v/c Ratio	0.23	0.39	0.34	0.61	0.22	0.14
Control Delay	24.4	4.6	10.2	3.8	21.7	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	4.6	10.2	3.8	21.7	3.2
Queue Length 50th (ft)	18	48	53	0	20	0
Queue Length 95th (ft)	55	74	92	47	52	28
Internal Link Dist (ft)		516	643		871	
Turn Bay Length (ft)	130			400	170	170
Base Capacity (vph)	391	3123	2419	1281	850	1013
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	0.16	0.27	0.22	0.51	0.18	0.13

Intersection Summary
Cycle Length: 67

Actuated Cycle Length: 50.4
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

Splits and Phases: 23: Derby Street & Route 3 NB Ramps



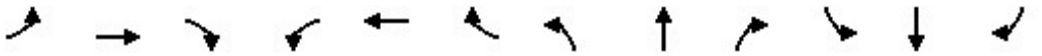


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	59	787	519	638	139	118
Future Volume (vph)	59	787	519	638	139	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	13	16
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	2.5
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1745	3490	3490	1561	3618	1812
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1745	3490	3490	1561	3618	1812
Peak-hour factor, PHF	0.92	0.92	0.98	0.98	0.91	0.91
Adj. Flow (vph)	64	855	530	651	153	130
RTOR Reduction (vph)	0	0	0	361	0	71
Lane Group Flow (vph)	64	855	530	290	153	59
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%
Turn Type	Prot	NA	NA	Perm	Prot	pt+ov
Protected Phases	7	4	8		6	6 7
Permitted Phases				8		
Actuated Green, G (s)	5.8	29.3	19.0	19.0	7.7	19.5
Effective Green, g (s)	6.3	32.8	22.5	22.5	9.7	23.0
Actuated g/C Ratio	0.12	0.65	0.45	0.45	0.19	0.46
Clearance Time (s)	4.5	7.5	7.5	7.5	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	217	2266	1554	695	694	825
v/s Ratio Prot	0.04	c0.25	0.15		c0.04	0.03
v/s Ratio Perm				0.19		
v/c Ratio	0.29	0.38	0.34	0.42	0.22	0.07
Uniform Delay, d1	20.1	4.1	9.2	9.5	17.2	7.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.1	0.1	0.4	0.2	0.0
Delay (s)	20.8	4.2	9.3	9.9	17.4	7.8
Level of Service	C	A	A	A	B	A
Approach Delay (s)		5.4	9.6		13.0	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Derby Street at Old Derby Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	716	115	14	893	10	21	0	18	4	1	9
Future Volume (vph)	40	716	115	14	893	10	21	0	18	4	1	9
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.850				0.850
Flt Protected	0.950			0.950			0.950				0.959	
Satd. Flow (prot)	3385	3355	1561	1745	3421	1561	1662	1615	0	0	1761	1561
Flt Permitted	0.950			0.950			0.463				0.778	
Satd. Flow (perm)	3385	3355	1561	1745	3421	1561	810	1615	0	0	1429	1561
Satd. Flow (RTOR)			86			107		491				99
Adj. Flow (vph)	44	796	128	15	950	11	26	0	22	6	1	13
Lane Group Flow (vph)	44	796	128	15	950	11	26	22	0	0	7	13
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4	5	3	8		5	2			6	
Permitted Phases			4			8	2			6		6
Detector Phase	7	4	5	3	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	10.0	22.5	10.0	10.0	10.0	10.0	10.0	11.0		11.0	11.0	11.0
Total Split (s)	11.0	61.0	13.0	11.0	61.0	61.0	13.0	28.0		15.0	15.0	15.0
Total Split (%)	8.3%	46.2%	9.8%	8.3%	46.2%	46.2%	9.8%	21.2%		11.4%	11.4%	11.4%
Maximum Green (s)	7.0	56.0	9.0	7.0	56.0	56.0	9.0	22.0		9.0	9.0	9.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	1.0	0.0	0.0	1.0	1.0	0.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0	-1.0	0.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?		Yes	Yes	Yes			Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		Min	Min	Min
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.12	0.48	0.11	0.08	0.64	0.01	0.07	0.03			0.03	0.04
Control Delay	29.2	11.1	1.8	30.4	16.1	0.0	18.5	0.1			28.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	29.2	11.1	1.8	30.4	16.1	0.0	18.5	0.1			28.2	0.2
Queue Length 50th (ft)	7	77	3	5	147	0	7	0			2	0
Queue Length 95th (ft)	24	182	23	24	225	0	23	0			11	0
Internal Link Dist (ft)		643			574			532			458	
Turn Bay Length (ft)	240		100	170		120	80					95
Base Capacity (vph)	423	3030	1189	218	3090	1420	404	973			281	386
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	0.10	0.26	0.11	0.07	0.31	0.01	0.06	0.02			0.02	0.03

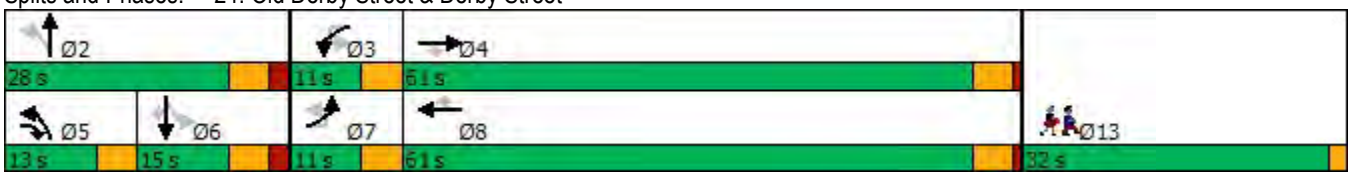
Intersection Summary
Cycle Length: 132

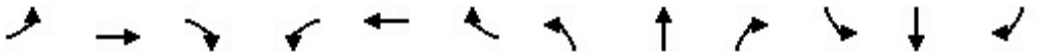
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	24%
Maximum Green (s)	30.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	23.0
Pedestrian Calls (#/hr)	0
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 58.8
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 24: Old Derby Street & Derby Street

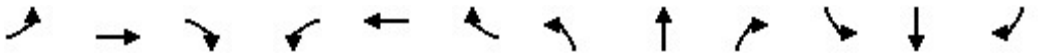




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	716	115	14	893	10	21	0	18	4	1	9
Future Volume (vph)	40	716	115	14	893	10	21	0	18	4	1	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	12	12	11	11	11
Total Lost time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	3385	3355	1561	1745	3421	1561	1662	1615			1761	1561
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.46	1.00			0.78	1.00
Satd. Flow (perm)	3385	3355	1561	1745	3421	1561	811	1615			1429	1561
Peak-hour factor, PHF	0.90	0.90	0.90	0.94	0.94	0.94	0.81	0.81	0.81	0.70	0.70	0.70
Adj. Flow (vph)	44	796	128	15	950	11	26	0	22	6	1	13
RTOR Reduction (vph)	0	0	34	0	0	6	0	15	0	0	0	11
Lane Group Flow (vph)	44	796	94	15	950	5	26	7	0	0	7	2
Heavy Vehicles (%)	0%	4%	0%	0%	2%	0%	5%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4	5	3	8		5	2			6	
Permitted Phases			4			8	2			6		6
Actuated Green, G (s)	3.5	28.2	35.1	1.1	25.8	25.8	17.3	17.3			6.4	6.4
Effective Green, g (s)	3.5	29.2	37.1	1.1	26.8	26.8	17.3	19.3			8.4	8.4
Actuated g/C Ratio	0.06	0.47	0.60	0.02	0.44	0.44	0.28	0.31			0.14	0.14
Clearance Time (s)	4.0	5.0	4.0	4.0	5.0	5.0	4.0	6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	192	1590	940	31	1488	679	323	505			194	212
v/s Ratio Prot	c0.01	0.24	c0.01	0.01	c0.28		0.01	0.00				
v/s Ratio Perm			0.05			0.00	c0.01				0.00	0.00
v/c Ratio	0.23	0.50	0.10	0.48	0.64	0.01	0.08	0.01			0.04	0.01
Uniform Delay, d1	27.8	11.2	5.2	30.0	13.6	9.9	16.3	14.6			23.1	23.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	0.6	0.2	0.0	11.4	0.9	0.0	0.1	0.0			0.1	0.0
Delay (s)	28.4	11.4	5.2	41.4	14.5	9.9	16.4	14.6			23.2	23.0
Level of Service	C	B	A	D	B	A	B	B			C	C
Approach Delay (s)		11.4			14.9			15.6			23.1	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	61.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	805	275	4	1178	10	68	0	26	10	5	27
Future Volume (vph)	10	805	275	4	1178	10	68	0	26	10	5	27
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.850				0.850
Flt Protected	0.950			0.950			0.950				0.968	
Satd. Flow (prot)	3385	3455	1561	1745	3490	1419	1745	1553	0	0	1669	1561
Flt Permitted	0.950			0.950			0.478				0.796	
Satd. Flow (perm)	3385	3455	1561	1745	3490	1419	878	1553	0	0	1372	1561
Satd. Flow (RTOR)			182			107		483				99
Adj. Flow (vph)	10	839	286	4	1253	11	113	0	43	17	9	47
Lane Group Flow (vph)	10	839	286	4	1253	11	113	43	0	0	26	47
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4	5	3	8		5	2			6	
Permitted Phases			4			8	2			6		6
Detector Phase	7	4	5	3	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	10.0	22.5	10.0	10.0	10.0	10.0	10.0	11.0		11.0	11.0	11.0
Total Split (s)	11.0	61.0	13.0	11.0	61.0	61.0	13.0	28.0		15.0	15.0	15.0
Total Split (%)	8.3%	46.2%	9.8%	8.3%	46.2%	46.2%	9.8%	21.2%		11.4%	11.4%	11.4%
Maximum Green (s)	7.0	56.0	9.0	7.0	56.0	56.0	9.0	22.0		9.0	9.0	9.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	1.0	0.0	0.0	1.0	1.0	0.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0	-1.0	0.0	-2.0			-2.0	-2.0
Total Lost Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?		Yes	Yes	Yes			Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min		Min	Min	Min
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.03	0.48	0.24	0.03	0.71	0.01	0.27	0.05			0.13	0.15
Control Delay	34.2	11.6	1.9	34.8	15.1	0.0	21.1	0.1			31.7	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	34.2	11.6	1.9	34.8	15.1	0.0	21.1	0.1			31.7	1.5
Queue Length 50th (ft)	2	97	8	1	172	0	28	0			9	0
Queue Length 95th (ft)	11	193	42	13	331	0	62	0			24	0
Internal Link Dist (ft)		643			574			532			458	
Turn Bay Length (ft)	240		100	170		120	80					95
Base Capacity (vph)	380	3038	1190	195	3069	1261	425	894			241	356
Starvation Cap Reductn	0	0	0	0	31	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	0.03	0.28	0.24	0.02	0.41	0.01	0.27	0.05			0.11	0.13

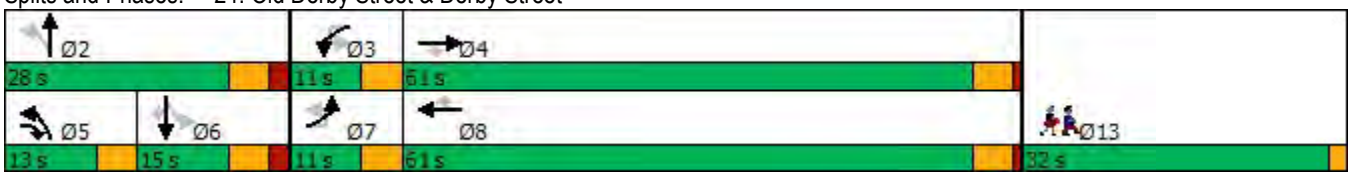
Intersection Summary
Cycle Length: 132

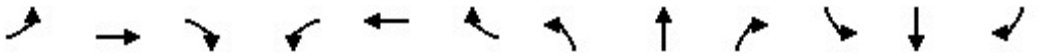
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	24%
Maximum Green (s)	30.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	23.0
Pedestrian Calls (#/hr)	0
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 65.2
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 24: Old Derby Street & Derby Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	805	275	4	1178	10	68	0	26	10	5	27
Future Volume (vph)	10	805	275	4	1178	10	68	0	26	10	5	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	12	12	11	11	11
Total Lost time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.97	1.00
Satd. Flow (prot)	3385	3455	1561	1745	3490	1419	1745	1553			1669	1561
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.48	1.00			0.80	1.00
Satd. Flow (perm)	3385	3455	1561	1745	3490	1419	878	1553			1372	1561
Peak-hour factor, PHF	0.96	0.96	0.96	0.94	0.94	0.94	0.60	0.60	0.60	0.58	0.58	0.58
Adj. Flow (vph)	10	839	286	4	1253	11	113	0	43	17	9	47
RTOR Reduction (vph)	0	0	67	0	0	6	0	29	0	0	0	41
Lane Group Flow (vph)	10	839	219	4	1253	5	113	14	0	0	26	6
Heavy Vehicles (%)	0%	1%	0%	0%	0%	10%	0%	0%	4%	10%	0%	0%
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4	5	3	8		5	2			6	
Permitted Phases			4			8	2			6		6
Actuated Green, G (s)	0.9	32.0	40.9	0.9	32.0	32.0	20.2	20.2			7.3	7.3
Effective Green, g (s)	0.9	33.0	42.9	0.9	33.0	33.0	20.2	22.2			9.3	9.3
Actuated g/C Ratio	0.01	0.48	0.63	0.01	0.48	0.48	0.30	0.33			0.14	0.14
Clearance Time (s)	4.0	5.0	4.0	4.0	5.0	5.0	4.0	6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	44	1674	983	23	1691	687	373	506			187	213
v/s Ratio Prot	c0.00	0.24	0.03	0.00	c0.36		c0.04	0.01				
v/s Ratio Perm			0.11			0.00	c0.05				0.02	0.00
v/c Ratio	0.23	0.50	0.22	0.17	0.74	0.01	0.30	0.03			0.14	0.03
Uniform Delay, d1	33.3	11.9	5.4	33.2	14.1	9.1	18.1	15.6			25.9	25.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	2.6	0.2	0.1	3.6	1.8	0.0	0.5	0.0			0.3	0.1
Delay (s)	35.9	12.2	5.5	36.8	15.9	9.1	18.6	15.6			26.2	25.5
Level of Service	D	B	A	D	B	A	B	B			C	C
Approach Delay (s)		10.7			15.9			17.8			25.8	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	68.1	Sum of lost time (s)	18.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	1	6	628	291	1	8	1101	8	38	2	10	15
Future Volume (vph)	1	6	628	291	1	8	1101	8	38	2	10	15
Lane Util. Factor	0.95	0.97	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Frt				0.850				0.850		0.874		
Flt Protected		0.950				0.950			0.950			
Satd. Flow (prot)	0	3385	3490	1561	0	1745	3490	1561	1745	1661	0	0
Flt Permitted									0.480			
Satd. Flow (perm)	0	3563	3490	1561	0	1837	3490	1561	882	1661	0	0
Satd. Flow (RTOR)				248				107		16		
Adj. Flow (vph)	1	7	698	323	1	8	1135	32	60	3	16	23
Lane Group Flow (vph)	0	8	698	323	0	9	1135	32	60	19	0	0
Turn Type	custom	Prot	NA	pm+ov	custom	Prot	NA	Perm	pm+pt	NA		Perm
Protected Phases		7	4	5		3	8		5	2		
Permitted Phases	7			4	3			8	2			6
Detector Phase	7	7	4	5	3	3	8	8	5	2		6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0
Minimum Split (s)	10.0	10.0	22.5	10.0	10.0	10.0	10.0	10.0	10.0	11.0		11.0
Total Split (s)	11.0	11.0	61.0	13.0	11.0	11.0	61.0	61.0	13.0	28.0		15.0
Total Split (%)	8.3%	8.3%	46.2%	9.8%	8.3%	8.3%	46.2%	46.2%	9.8%	21.2%		11.4%
Maximum Green (s)	7.0	7.0	56.0	9.0	7.0	7.0	56.0	56.0	9.0	22.0		9.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0
All-Red Time (s)	0.0	0.0	1.0	0.0	0.0	0.0	1.0	1.0	0.0	2.0		2.0
Lost Time Adjust (s)		0.0	-1.0	-1.0		0.0	-1.0	-1.0	0.0	-2.0		
Total Lost Time (s)		4.0	4.0	3.0		4.0	4.0	4.0	4.0	4.0		
Lead/Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag	Lag	Lead			Lag
Lead-Lag Optimize?			Yes	Yes	Yes	Yes			Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	None	None	None	None	None	None	None	None	None	Min		Min
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.02	0.41	0.28		0.05	0.67	0.04	0.14	0.03		
Control Delay		31.7	11.3	1.8		31.8	14.6	0.1	18.0	11.0		
Queue Delay		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total Delay		31.7	11.3	1.8		31.8	14.6	0.1	18.0	11.0		
Queue Length 50th (ft)		1	73	6		3	141	0	13	1		
Queue Length 95th (ft)		9	158	40		19	293	0	37	10		
Internal Link Dist (ft)			643				574			532		
Turn Bay Length (ft)		240		100		170		120	80			
Base Capacity (vph)		433	3185	1200		223	3185	1434	446	701		
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		0.02	0.22	0.27		0.04	0.36	0.02	0.13	0.03		

Intersection Summary
Cycle Length: 132

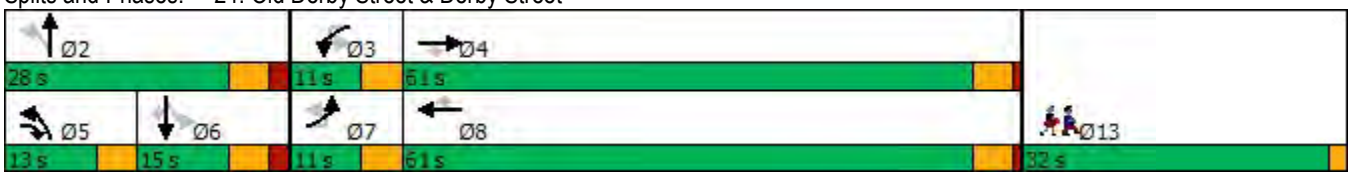


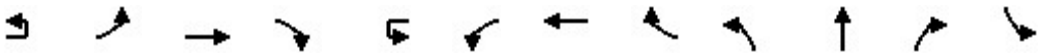
Lane Group	SBT	SBR	Ø13
Lane Configurations			
Traffic Volume (vph)	3	17	
Future Volume (vph)	3	17	
Lane Util. Factor	1.00	1.00	
Frt		0.850	
Flt Protected	0.961		
Satd. Flow (prot)	1765	1561	
Flt Permitted	0.766		
Satd. Flow (perm)	1407	1561	
Satd. Flow (RTOR)		99	
Adj. Flow (vph)	5	26	
Lane Group Flow (vph)	28	26	
Turn Type	NA	Perm	
Protected Phases	6		13
Permitted Phases		6	
Detector Phase	6	6	
Switch Phase			
Minimum Initial (s)	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	32.0
Total Split (s)	15.0	15.0	32.0
Total Split (%)	11.4%	11.4%	24%
Maximum Green (s)	9.0	9.0	30.0
Yellow Time (s)	4.0	4.0	2.0
All-Red Time (s)	2.0	2.0	0.0
Lost Time Adjust (s)	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0	
Lead/Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	Min	Min	None
Walk Time (s)			7.0
Flash Dont Walk (s)			23.0
Pedestrian Calls (#/hr)			0
v/c Ratio	0.13	0.08	
Control Delay	29.2	0.5	
Queue Delay	0.0	0.0	
Total Delay	29.2	0.5	
Queue Length 50th (ft)	8	0	
Queue Length 95th (ft)	28	0	
Internal Link Dist (ft)	458		
Turn Bay Length (ft)		95	
Base Capacity (vph)	268	378	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.10	0.07	

Intersection Summary

Actuated Cycle Length: 60.5
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 24: Old Derby Street & Derby Street

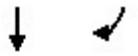




Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	1	6	628	291	1	8	1101	8	38	2	10	15
Future Volume (vph)	1	6	628	291	1	8	1101	8	38	2	10	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	12	12	11
Total Lost time (s)		4.0	4.0	3.0		4.0	4.0	4.0	4.0	4.0		
Lane Util. Factor		0.97	0.95	1.00		1.00	0.95	1.00	1.00	1.00		
Frt		1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.87		
Flt Protected		0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)		3385	3490	1561		1745	3490	1561	1745	1660		
Flt Permitted		1.00	1.00	1.00		1.00	1.00	1.00	0.48	1.00		
Satd. Flow (perm)		3563	3490	1561		1837	3490	1561	881	1660		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.97	0.97	0.97	0.25	0.63	0.63	0.63	0.65
Adj. Flow (vph)	1	7	698	323	1	8	1135	32	60	3	16	23
RTOR Reduction (vph)	0	0	0	99	0	0	0	17	0	11	0	0
Lane Group Flow (vph)	0	8	698	224	0	9	1135	15	60	8	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	custom	Prot	NA	pm+ov	custom	Prot	NA	Perm	pm+pt	NA		Perm
Protected Phases		7	4	5		3	8		5	2		
Permitted Phases	7			4	3			8	2			6
Actuated Green, G (s)		0.9	28.1	36.0		1.0	28.2	28.2	19.3	19.3		
Effective Green, g (s)		0.9	29.1	38.0		1.0	29.2	29.2	19.3	21.3		
Actuated g/C Ratio		0.01	0.46	0.60		0.02	0.46	0.46	0.30	0.34		
Clearance Time (s)		4.0	5.0	4.0		4.0	5.0	5.0	4.0	6.0		
Vehicle Extension (s)		3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)		50	1601	935		28	1607	718	375	557		
v/s Ratio Prot			0.20	c0.03			c0.33		0.02	0.01		
v/s Ratio Perm		0.00		0.11		c0.00		0.01	c0.03			
v/c Ratio		0.16	0.44	0.24		0.32	0.71	0.02	0.16	0.02		
Uniform Delay, d1		30.9	11.6	5.9		30.9	13.7	9.3	16.0	14.0		
Progression Factor		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2		1.5	0.2	0.1		6.6	1.4	0.0	0.2	0.0		
Delay (s)		32.4	11.8	6.1		37.4	15.1	9.3	16.2	14.1		
Level of Service		C	B	A		D	B	A	B	B		
Approach Delay (s)			10.2				15.1			15.7		
Approach LOS			B				B			B		

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	63.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	3	17
Future Volume (vph)	3	17
Ideal Flow (vphpl)	1900	1900
Lane Width	11	11
Total Lost time (s)	4.0	4.0
Lane Util. Factor	1.00	1.00
Frt	1.00	0.85
Flt Protected	0.96	1.00
Satd. Flow (prot)	1764	1561
Flt Permitted	0.77	1.00
Satd. Flow (perm)	1406	1561
Peak-hour factor, PHF	0.65	0.65
Adj. Flow (vph)	5	26
RTOR Reduction (vph)	0	22
Lane Group Flow (vph)	28	4
Heavy Vehicles (%)	0%	0%
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Actuated Green, G (s)	7.4	7.4
Effective Green, g (s)	9.4	9.4
Actuated g/C Ratio	0.15	0.15
Clearance Time (s)	6.0	6.0
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	208	231
v/s Ratio Prot		
v/s Ratio Perm	0.02	0.00
v/c Ratio	0.13	0.02
Uniform Delay, d1	23.5	23.1
Progression Factor	1.00	1.00
Incremental Delay, d2	0.3	0.0
Delay (s)	23.8	23.1
Level of Service	C	C
Approach Delay (s)	23.4	
Approach LOS	C	

Intersection Summary

Derby Street at the Derby Street Shops Main Driveway (signalized)

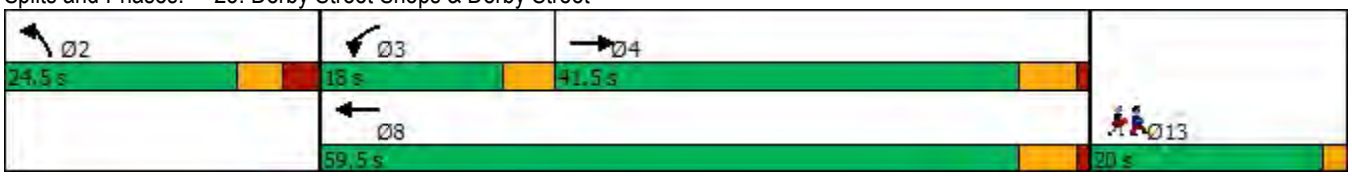


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø13
Lane Configurations							
Traffic Volume (vph)	712	26	23	852	65	15	
Future Volume (vph)	712	26	23	852	65	15	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	0.95	
Frt	0.995				0.972		
Flt Protected			0.950		0.961		
Satd. Flow (prot)	3343	0	1805	3421	3443	0	
Flt Permitted			0.950		0.961		
Satd. Flow (perm)	3343	0	1805	3421	3443	0	
Satd. Flow (RTOR)	4				18		
Adj. Flow (vph)	791	29	26	957	78	18	
Lane Group Flow (vph)	820	0	26	957	96	0	
Turn Type	NA		Prot	NA	Prot		
Protected Phases	4		3	8	2		13
Permitted Phases							
Detector Phase	4		3	8	2		
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0		5.0
Minimum Split (s)	10.5		10.0	10.5	11.5		20.0
Total Split (s)	41.5		18.0	59.5	24.5		20.0
Total Split (%)	39.9%		17.3%	57.2%	23.6%		19%
Maximum Green (s)	36.0		14.0	54.0	18.0		18.0
Yellow Time (s)	4.5		4.0	4.5	3.5		2.0
All-Red Time (s)	1.0		0.0	1.0	3.0		0.0
Lost Time Adjust (s)	-1.5		0.0	-1.5	-2.5		
Total Lost Time (s)	4.0		4.0	4.0	4.0		
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	None		None	None	None		None
Walk Time (s)							7.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							1
v/c Ratio	0.43		0.08	0.43	0.10		
Control Delay	11.3		27.3	7.4	19.2		
Queue Delay	0.0		0.0	0.0	0.0		
Total Delay	11.3		27.3	7.4	19.2		
Queue Length 50th (ft)	43		4	53	5		
Queue Length 95th (ft)	243		38	211	39		
Internal Link Dist (ft)	574			902	548		
Turn Bay Length (ft)			150				
Base Capacity (vph)	2775		780	3165	1959		
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	0.30		0.03	0.30	0.05		

Intersection Summary
Cycle Length: 104

Actuated Cycle Length: 44.8
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 25: Derby Street Shops & Derby Street





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	712	26	23	852	65	15
Future Volume (vph)	712	26	23	852	65	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	13
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	0.95		1.00	0.95	0.97	
Frt	0.99		1.00	1.00	0.97	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	3342		1805	3421	3442	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	3342		1805	3421	3442	
Peak-hour factor, PHF	0.90	0.90	0.89	0.89	0.83	0.83
Adj. Flow (vph)	791	29	26	957	78	18
RTOR Reduction (vph)	2	0	0	0	15	0
Lane Group Flow (vph)	818	0	26	957	81	0
Heavy Vehicles (%)	4%	0%	0%	2%	0%	0%
Turn Type	NA		Prot	NA	Prot	
Protected Phases	4		3	8	2	
Permitted Phases						
Actuated Green, G (s)	21.3		2.1	27.4	5.5	
Effective Green, g (s)	22.8		2.1	28.9	8.0	
Actuated g/C Ratio	0.47		0.04	0.59	0.16	
Clearance Time (s)	5.5		4.0	5.5	6.5	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1564		77	2030	565	
v/s Ratio Prot	0.24		0.01	c0.28	c0.02	
v/s Ratio Perm						
v/c Ratio	0.52		0.34	0.47	0.14	
Uniform Delay, d1	9.1		22.6	5.6	17.4	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.3		2.6	0.2	0.1	
Delay (s)	9.4		25.2	5.8	17.5	
Level of Service	A		C	A	B	
Approach Delay (s)	9.4			6.3	17.5	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	48.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

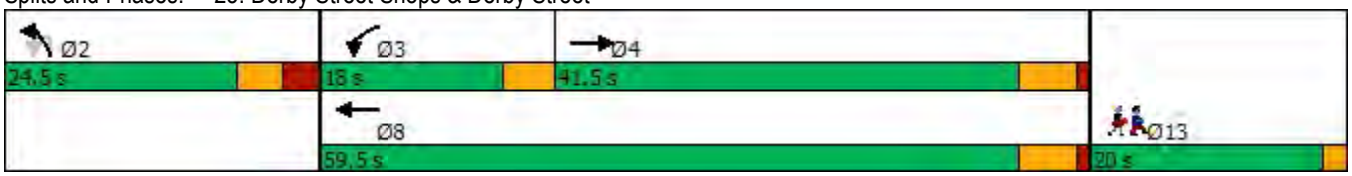


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø13
Lane Configurations							
Traffic Volume (vph)	751	90	75	848	344	115	
Future Volume (vph)	751	90	75	848	344	115	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	0.95	
Frt	0.984				0.962		
Flt Protected			0.950		0.964		
Satd. Flow (prot)	3434	0	1805	3490	3418	0	
Flt Permitted			0.950		0.964		
Satd. Flow (perm)	3434	0	1805	3490	3418	0	
Satd. Flow (RTOR)	14				41		
Adj. Flow (vph)	774	93	82	922	362	121	
Lane Group Flow (vph)	867	0	82	922	483	0	
Turn Type	NA		Prot	NA	Prot		
Protected Phases	4		3	8	2		13
Permitted Phases							
Detector Phase	4		3	8	2		
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0		5.0
Minimum Split (s)	10.5		10.0	10.5	11.5		20.0
Total Split (s)	41.5		18.0	59.5	24.5		20.0
Total Split (%)	39.9%		17.3%	57.2%	23.6%		19%
Maximum Green (s)	36.0		14.0	54.0	18.0		18.0
Yellow Time (s)	4.5		4.0	4.5	3.5		2.0
All-Red Time (s)	1.0		0.0	1.0	3.0		0.0
Lost Time Adjust (s)	-1.5		0.0	-1.5	-2.5		
Total Lost Time (s)	4.0		4.0	4.0	4.0		
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	None		None	None	None		None
Walk Time (s)							7.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							1
v/c Ratio	0.63		0.32	0.48	0.51		
Control Delay	20.3		35.0	10.3	24.3		
Queue Delay	0.0		0.0	0.0	0.0		
Total Delay	20.3		35.0	10.3	24.3		
Queue Length 50th (ft)	131		28	86	71		
Queue Length 95th (ft)	322		97	247	197		
Internal Link Dist (ft)	574			902	548		
Turn Bay Length (ft)			150				
Base Capacity (vph)	2187		442	2947	1252		
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	0.40		0.19	0.31	0.39		

Intersection Summary
Cycle Length: 104

Actuated Cycle Length: 65.1
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 25: Derby Street Shops & Derby Street





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	751	90	75	848	344	115
Future Volume (vph)	751	90	75	848	344	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	13
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	0.95		1.00	0.95	0.97	
Frt	0.98		1.00	1.00	0.96	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	3434		1805	3490	3419	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	3434		1805	3490	3419	
Peak-hour factor, PHF	0.97	0.97	0.92	0.92	0.95	0.95
Adj. Flow (vph)	774	93	82	922	362	121
RTOR Reduction (vph)	9	0	0	0	30	0
Lane Group Flow (vph)	858	0	82	922	453	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	NA		Prot	NA	Prot	
Protected Phases	4		3	8	2	
Permitted Phases						
Actuated Green, G (s)	24.1		7.2	35.3	14.6	
Effective Green, g (s)	25.6		7.2	36.8	17.1	
Actuated g/C Ratio	0.39		0.11	0.56	0.26	
Clearance Time (s)	5.5		4.0	5.5	6.5	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1327		196	1940	883	
v/s Ratio Prot	c0.25		0.05	c0.26	c0.13	
v/s Ratio Perm						
v/c Ratio	0.65		0.42	0.48	0.51	
Uniform Delay, d1	16.6		27.5	8.9	21.0	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.1		1.4	0.2	0.5	
Delay (s)	17.7		29.0	9.1	21.5	
Level of Service	B		C	A	C	
Approach Delay (s)	17.7			10.7	21.5	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	66.2	Sum of lost time (s)	14.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

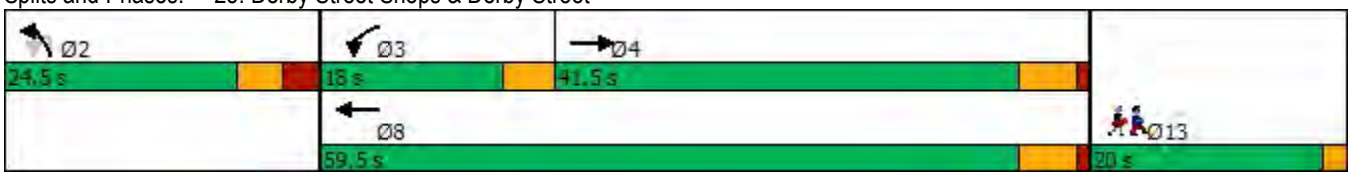
c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBU	NBL	NBR	Ø13
Lane Configurations								
Traffic Volume (vph)	532	122	120	769	2	349	127	
Future Volume (vph)	532	122	120	769	2	349	127	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	0.97	0.95	
Frt	0.972					0.960		
Flt Protected			0.950			0.965		
Satd. Flow (prot)	3392	0	1805	3490	0	3415	0	
Flt Permitted			0.950			0.965		
Satd. Flow (perm)	3392	0	1805	3490	0	3415	0	
Satd. Flow (RTOR)	30					46		
Adj. Flow (vph)	548	126	126	809	2	379	138	
Lane Group Flow (vph)	674	0	126	809	0	519	0	
Turn Type	NA		Prot	NA	Perm	Prot		
Protected Phases	4		3	8		2		13
Permitted Phases					2			
Detector Phase	4		3	8	2	2		
Switch Phase								
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0		5.0
Minimum Split (s)	10.5		10.0	10.5	11.5	11.5		20.0
Total Split (s)	41.5		18.0	59.5	24.5	24.5		20.0
Total Split (%)	39.9%		17.3%	57.2%	23.6%	23.6%		19%
Maximum Green (s)	36.0		14.0	54.0	18.0	18.0		18.0
Yellow Time (s)	4.5		4.0	4.5	3.5	3.5		2.0
All-Red Time (s)	1.0		0.0	1.0	3.0	3.0		0.0
Lost Time Adjust (s)	-1.5		0.0	-1.5		-2.5		
Total Lost Time (s)	4.0		4.0	4.0		4.0		
Lead/Lag	Lag		Lead					
Lead-Lag Optimize?	Yes		Yes					
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None		None	None	None	None		None
Walk Time (s)								7.0
Flash Dont Walk (s)								11.0
Pedestrian Calls (#/hr)								0
v/c Ratio	0.55		0.39	0.42		0.49		
Control Delay	17.4		27.6	7.9		18.4		
Queue Delay	0.0		0.0	0.0		0.0		
Total Delay	17.4		27.6	7.9		18.4		
Queue Length 50th (ft)	95		40	72		69		
Queue Length 95th (ft)	168		96	119		135		
Internal Link Dist (ft)	574			902		548		
Turn Bay Length (ft)			150					
Base Capacity (vph)	2348		479	3187		1355		
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	0.29		0.26	0.25		0.38		

Intersection Summary
Cycle Length: 104

Actuated Cycle Length: 56.5
Natural Cycle: 65
Control Type: Actuated-Uncoordinated

Splits and Phases: 25: Derby Street Shops & Derby Street

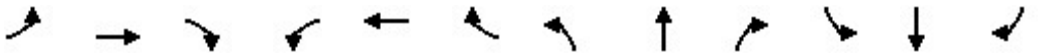


Movement	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	532	122	120	769	2	349	127
Future Volume (vph)	532	122	120	769	2	349	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12	13
Total Lost time (s)	4.0		4.0	4.0		4.0	
Lane Util. Factor	0.95		1.00	0.95		0.97	
Frt	0.97		1.00	1.00		0.96	
Flt Protected	1.00		0.95	1.00		0.96	
Satd. Flow (prot)	3392		1805	3490		3414	
Flt Permitted	1.00		0.95	1.00		0.96	
Satd. Flow (perm)	3392		1805	3490		3414	
Peak-hour factor, PHF	0.97	0.97	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	548	126	126	809	2	379	138
RTOR Reduction (vph)	19	0	0	0	0	32	0
Lane Group Flow (vph)	655	0	126	809	0	487	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%
Turn Type	NA		Prot	NA	Perm	Prot	
Protected Phases	4		3	8		2	
Permitted Phases					2		
Actuated Green, G (s)	18.5		7.9	30.4		14.3	
Effective Green, g (s)	20.0		7.9	31.9		16.8	
Actuated g/C Ratio	0.35		0.14	0.56		0.30	
Clearance Time (s)	5.5		4.0	5.5		6.5	
Vehicle Extension (s)	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	1196		251	1963		1011	
v/s Ratio Prot	c0.19		c0.07	0.23			
v/s Ratio Perm						0.14	
v/c Ratio	0.55		0.50	0.41		0.48	
Uniform Delay, d1	14.7		22.6	7.1		16.4	
Progression Factor	1.00		1.00	1.00		1.00	
Incremental Delay, d2	0.5		1.6	0.1		0.4	
Delay (s)	15.2		24.2	7.2		16.7	
Level of Service	B		C	A		B	
Approach Delay (s)	15.2			9.5		16.7	
Approach LOS	B			A		B	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	56.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Derby Street at Cushing Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	273	414	11	11	537	34	1	0	7	28	0	414
Future Volume (vph)	273	414	11	11	537	34	1	0	7	28	0	414
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.991			0.882				0.850
Flt Protected	0.950			0.950				0.994			0.950	
Satd. Flow (prot)	1719	3494	0	1745	3426	0	0	1832	0	0	1745	1568
Flt Permitted	0.950			0.950				0.969			0.747	
Satd. Flow (perm)	1719	3494	0	1745	3426	0	0	1786	0	0	1372	1568
Satd. Flow (RTOR)		4			6			104				499
Adj. Flow (vph)	294	445	12	12	584	37	2	0	14	34	0	499
Lane Group Flow (vph)	294	457	0	12	621	0	0	16	0	0	34	499
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7 14	10		3	8			2			6	
Permitted Phases							2			6		6
Detector Phase	7 14	10		3	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)		23.5		10.0	10.5		10.0	10.0		10.0	10.0	10.0
Total Split (s)		82.5		14.0	57.5		15.0	15.0		15.0	15.0	15.0
Total Split (%)		62.7%		10.6%	43.7%		11.4%	11.4%		11.4%	11.4%	11.4%
Maximum Green (s)		77.0		10.0	52.0		10.0	10.0		10.0	10.0	10.0
Yellow Time (s)		4.5		4.0	4.5		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)		1.0		0.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		-1.5		0.0	-1.5			-1.0			-1.0	-1.0
Total Lost Time (s)		4.0		4.0	4.0			4.0			4.0	4.0
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode		None		None	None		None	None		None	None	None
Walk Time (s)		7.0										
Flash Dont Walk (s)		11.0										
Pedestrian Calls (#/hr)		0										
v/c Ratio	0.47	0.19		0.07	0.57			0.04			0.16	0.75
Control Delay	19.3	4.3		30.5	20.1			0.2			28.1	11.8
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	19.3	4.3		30.5	20.1			0.2			28.1	11.8
Queue Length 50th (ft)	82	21		4	96			0			11	0
Queue Length 95th (ft)	173	67		21	167			0			37	56
Internal Link Dist (ft)		902			1325			619			915	
Turn Bay Length (ft)	145			125								150
Base Capacity (vph)	1018	3494		283	2947			404			244	690
Starvation Cap Reductn	0	0		0	0			0			0	0
Spillback Cap Reductn	0	0		0	0			0			0	0
Storage Cap Reductn	0	0		0	0			0			0	0
Reduced v/c Ratio	0.29	0.13		0.04	0.21			0.04			0.14	0.72

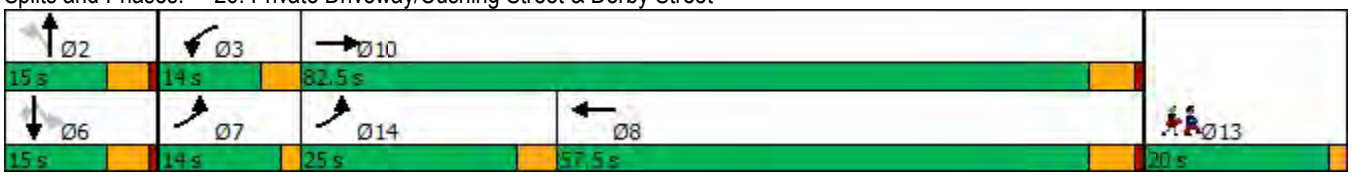
Intersection Summary
Cycle Length: 131.5

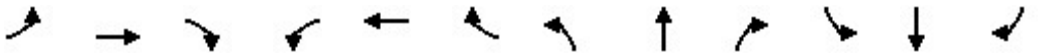
Lane Group	Ø7	Ø13	Ø14
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Adj. Flow (vph)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	7	13	14
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	22.0
Total Split (s)	14.0	20.0	25.0
Total Split (%)	11%	15%	19%
Maximum Green (s)	12.0	18.0	21.0
Yellow Time (s)	2.0	2.0	4.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead		Lag
Lead-Lag Optimize?	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	None	None	None
Walk Time (s)		7.0	7.0
Flash Dont Walk (s)		11.0	11.0
Pedestrian Calls (#/hr)		0	0
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary

Actuated Cycle Length: 62.7
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 26: Private Driveway/Cushing Street & Derby Street

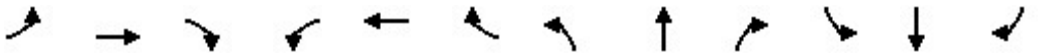




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	273	414	11	11	537	34	1	0	7	28	0	414
Future Volume (vph)	273	414	11	11	537	34	1	0	7	28	0	414
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	11	11	11	15	15	15	11	11	12
Total Lost time (s)	2.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.99			0.88			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.95	1.00
Satd. Flow (prot)	1719	3494		1745	3426			1832			1745	1568
Flt Permitted	0.95	1.00		0.95	1.00			0.97			0.75	1.00
Satd. Flow (perm)	1719	3494		1745	3426			1786			1372	1568
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.50	0.50	0.50	0.83	0.83	0.83
Adj. Flow (vph)	294	445	12	12	584	37	2	0	14	34	0	499
RTOR Reduction (vph)	0	1	0	0	4	0	0	14	0	0	0	427
Lane Group Flow (vph)	294	456	0	12	617	0	0	2	0	0	34	72
Heavy Vehicles (%)	5%	3%	0%	0%	1%	0%	0%	0%	0%	0%	0%	3%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7 14	10		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	21.0	41.7		1.2	21.9			8.5			8.5	8.5
Effective Green, g (s)	21.0	43.2		1.2	23.4			9.5			9.5	9.5
Actuated g/C Ratio	0.32	0.66		0.02	0.36			0.14			0.14	0.14
Clearance Time (s)		5.5		4.0	5.5			5.0			5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	547	2290		31	1216			257			197	226
v/s Ratio Prot	c0.17	0.13		0.01	c0.18							
v/s Ratio Perm								0.00			0.02	c0.05
v/c Ratio	0.54	0.20		0.39	0.51			0.01			0.17	0.32
Uniform Delay, d1	18.5	4.5		32.0	16.7			24.2			24.8	25.3
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	1.0	0.0		7.8	0.3			0.0			0.4	0.8
Delay (s)	19.5	4.5		39.8	17.1			24.2			25.2	26.1
Level of Service	B	A		D	B			C			C	C
Approach Delay (s)		10.4			17.5			24.2			26.1	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	65.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	461	699	7	3	625	45	5	2	7	23	1	561
Future Volume (vph)	461	699	7	3	625	45	5	2	7	23	1	561
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.990			0.932				0.850
Flt Protected	0.950			0.950				0.982			0.954	
Satd. Flow (prot)	1805	3571	0	1745	3455	0	0	1913	0	0	1752	1599
Flt Permitted	0.950			0.950				0.904			0.752	
Satd. Flow (perm)	1805	3571	0	1745	3455	0	0	1761	0	0	1381	1599
Satd. Flow (RTOR)		1			7			12				588
Adj. Flow (vph)	470	713	7	3	694	50	9	3	12	24	1	597
Lane Group Flow (vph)	470	720	0	3	744	0	0	24	0	0	25	597
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7 14	10		3	8			2			6	
Permitted Phases							2			6		6
Detector Phase	7 14	10		3	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)		23.5		10.0	10.5		10.0	10.0		10.0	10.0	10.0
Total Split (s)		82.5		14.0	57.5		15.0	15.0		15.0	15.0	15.0
Total Split (%)		62.7%		10.6%	43.7%		11.4%	11.4%		11.4%	11.4%	11.4%
Maximum Green (s)		77.0		10.0	52.0		10.0	10.0		10.0	10.0	10.0
Yellow Time (s)		4.5		4.0	4.5		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)		1.0		0.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		-1.5		0.0	-1.5			-1.0			-1.0	-1.0
Total Lost Time (s)		4.0		4.0	4.0			4.0			4.0	4.0
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode		None		None	None		None	None		None	None	None
Walk Time (s)		7.0										
Flash Dont Walk (s)		11.0										
Pedestrian Calls (#/hr)		0										
v/c Ratio	0.66	0.28		0.02	0.68			0.10			0.14	0.83
Control Delay	29.0	5.9		46.3	29.3			29.1			42.0	15.5
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	29.0	5.9		46.3	29.3			29.1			42.0	15.5
Queue Length 50th (ft)	180	42		2	169			5			11	4
Queue Length 95th (ft)	#501	181		13	314			20			46	#191
Internal Link Dist (ft)		902			1325			619			915	
Turn Bay Length (ft)	145			125								150
Base Capacity (vph)	820	3246		214	2274			248			186	724
Starvation Cap Reductn	0	0		0	0			0			0	0
Spillback Cap Reductn	0	0		0	0			0			0	0
Storage Cap Reductn	0	0		0	0			0			0	0
Reduced v/c Ratio	0.57	0.22		0.01	0.33			0.10			0.13	0.82

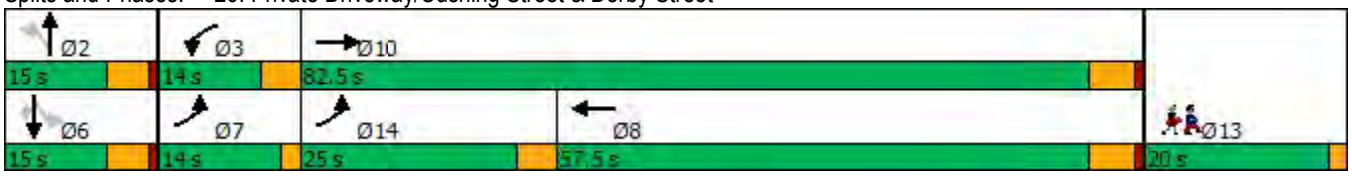
Intersection Summary
Cycle Length: 131.5

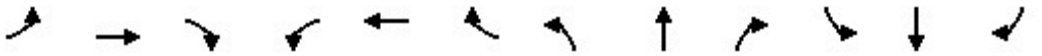
Lane Group	Ø7	Ø13	Ø14
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Adj. Flow (vph)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	7	13	14
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	22.0
Total Split (s)	14.0	20.0	25.0
Total Split (%)	11%	15%	19%
Maximum Green (s)	12.0	18.0	21.0
Yellow Time (s)	2.0	2.0	4.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead		Lag
Lead-Lag Optimize?	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	None	None	None
Walk Time (s)		7.0	7.0
Flash Dont Walk (s)		11.0	11.0
Pedestrian Calls (#/hr)		2	0
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary

Actuated Cycle Length: 84.7
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 26: Private Driveway/Cushing Street & Derby Street

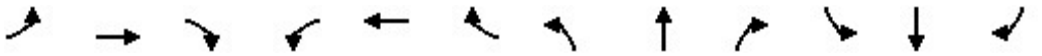




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	461	699	7	3	625	45	5	2	7	23	1	561
Future Volume (vph)	461	699	7	3	625	45	5	2	7	23	1	561
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	11	11	11	15	15	15	11	11	12
Total Lost time (s)	2.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.99			0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (prot)	1805	3569		1745	3454			1913			1753	1599
Flt Permitted	0.95	1.00		0.95	1.00			0.90			0.75	1.00
Satd. Flow (perm)	1805	3569		1745	3454			1763			1382	1599
Peak-hour factor, PHF	0.98	0.98	0.98	0.90	0.90	0.90	0.58	0.58	0.58	0.94	0.94	0.94
Adj. Flow (vph)	470	713	7	3	694	50	9	3	12	24	1	597
RTOR Reduction (vph)	0	0	0	0	5	0	0	11	0	0	0	516
Lane Group Flow (vph)	470	720	0	3	739	0	0	13	0	0	25	81
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7 14	10		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	31.4	59.4		0.9	28.9			10.0			10.0	10.0
Effective Green, g (s)	31.4	60.9		0.9	30.4			11.0			11.0	11.0
Actuated g/C Ratio	0.35	0.68		0.01	0.34			0.12			0.12	0.12
Clearance Time (s)		5.5		4.0	5.5			5.0			5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	633	2431		17	1174			216			170	196
v/s Ratio Prot	c0.26	0.20		0.00	c0.21							
v/s Ratio Perm								0.01			0.02	c0.05
v/c Ratio	0.74	0.30		0.18	0.63			0.06			0.15	0.42
Uniform Delay, d1	25.5	5.7		43.9	24.8			34.6			35.0	36.2
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	4.7	0.1		4.9	1.1			0.1			0.4	1.4
Delay (s)	30.1	5.8		48.8	25.8			34.8			35.4	37.7
Level of Service	C	A		D	C			C			D	D
Approach Delay (s)		15.4			25.9			34.8			37.6	
Approach LOS		B			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	89.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	318	649	8	2	717	19	8	3	2	11	0	519
Future Volume (vph)	318	649	8	2	717	19	8	3	2	11	0	519
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.996			0.980				0.850
Flt Protected	0.950			0.950				0.971			0.950	
Satd. Flow (prot)	1805	3568	0	1745	3476	0	0	1989	0	0	1745	1615
Flt Permitted	0.950			0.950				0.853			0.744	
Satd. Flow (perm)	1805	3568	0	1745	3476	0	0	1747	0	0	1366	1615
Satd. Flow (RTOR)		2			2			3				558
Adj. Flow (vph)	335	683	8	2	755	20	12	5	3	12	0	558
Lane Group Flow (vph)	335	691	0	2	775	0	0	20	0	0	12	558
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7 14	10		3	8			2			6	
Permitted Phases							2			6		6
Detector Phase	7 14	10		3	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)		23.5		10.0	10.5		10.0	10.0		10.0	10.0	10.0
Total Split (s)		82.5		14.0	57.5		15.0	15.0		15.0	15.0	15.0
Total Split (%)		62.7%		10.6%	43.7%		11.4%	11.4%		11.4%	11.4%	11.4%
Maximum Green (s)		77.0		10.0	52.0		10.0	10.0		10.0	10.0	10.0
Yellow Time (s)		4.5		4.0	4.5		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)		1.0		0.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		-1.5		0.0	-1.5			-1.0			-1.0	-1.0
Total Lost Time (s)		4.0		4.0	4.0			4.0			4.0	4.0
Lead/Lag		Lag		Lead								
Lead-Lag Optimize?		Yes		Yes								
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode		None		None	None		None	None		None	None	None
Walk Time (s)		7.0										
Flash Dont Walk (s)		11.0										
Pedestrian Calls (#/hr)		0										
v/c Ratio	0.54	0.28		0.01	0.64			0.08			0.06	0.80
Control Delay	27.0	5.9		44.5	24.8			35.5			39.5	13.5
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	27.0	5.9		44.5	24.8			35.5			39.5	13.5
Queue Length 50th (ft)	110	36		1	132			6			4	0
Queue Length 95th (ft)	318	172		11	330			26			29	#168
Internal Link Dist (ft)		902			1325			619			915	
Turn Bay Length (ft)	145			125								150
Base Capacity (vph)	922	3324		244	2606			271			210	720
Starvation Cap Reductn	0	0		0	0			0			0	0
Spillback Cap Reductn	0	0		0	0			0			0	0
Storage Cap Reductn	0	0		0	0			0			0	0
Reduced v/c Ratio	0.36	0.21		0.01	0.30			0.07			0.06	0.78

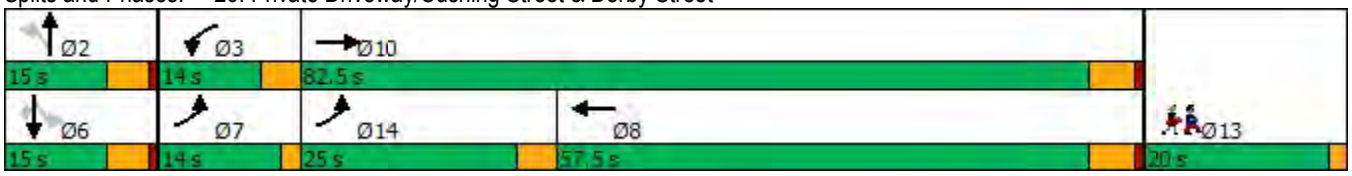
Intersection Summary
Cycle Length: 131.5

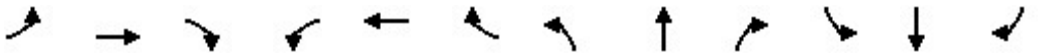
Lane Group	Ø7	Ø13	Ø14
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Adj. Flow (vph)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	7	13	14
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	22.0
Total Split (s)	14.0	20.0	25.0
Total Split (%)	11%	15%	19%
Maximum Green (s)	12.0	18.0	21.0
Yellow Time (s)	2.0	2.0	4.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead		Lag
Lead-Lag Optimize?	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	None	None	None
Walk Time (s)		7.0	7.0
Flash Dont Walk (s)		11.0	11.0
Pedestrian Calls (#/hr)		3	0
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary

Actuated Cycle Length: 76.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 26: Private Driveway/Cushing Street & Derby Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	318	649	8	2	717	19	8	3	2	11	0	519
Future Volume (vph)	318	649	8	2	717	19	8	3	2	11	0	519
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	11	11	11	15	15	15	11	11	12
Total Lost time (s)	2.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00			0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.95	1.00
Satd. Flow (prot)	1805	3568		1745	3476			1988			1745	1615
Flt Permitted	0.95	1.00		0.95	1.00			0.85			0.74	1.00
Satd. Flow (perm)	1805	3568		1745	3476			1747			1367	1615
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.65	0.65	0.65	0.93	0.93	0.93
Adj. Flow (vph)	335	683	8	2	755	20	12	5	3	12	0	558
RTOR Reduction (vph)	0	1	0	0	1	0	0	3	0	0	0	487
Lane Group Flow (vph)	335	690	0	2	774	0	0	17	0	0	12	71
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7 14	10		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	23.9	52.0		0.8	28.9			9.3			9.3	9.3
Effective Green, g (s)	23.9	53.5		0.8	30.4			10.3			10.3	10.3
Actuated g/C Ratio	0.30	0.66		0.01	0.38			0.13			0.13	0.13
Clearance Time (s)		5.5		4.0	5.5			5.0			5.0	5.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	533	2359		17	1306			222			174	205
v/s Ratio Prot	c0.19	0.19		0.00	c0.22							
v/s Ratio Perm								0.01			0.01	c0.04
v/c Ratio	0.63	0.29		0.12	0.59			0.08			0.07	0.35
Uniform Delay, d1	24.7	5.8		39.7	20.3			31.1			31.1	32.2
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	2.3	0.1		3.1	0.7			0.2			0.2	1.0
Delay (s)	27.0	5.8		42.8	21.0			31.3			31.2	33.2
Level of Service	C	A		D	C			C			C	C
Approach Delay (s)		12.7			21.1			31.3			33.2	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	80.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Route 53 at Cushing Street

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	91	201	19	92	327	36	44	254	100	8	270	69
Future Volume (vph)	91	201	19	92	327	36	44	254	100	8	270	69
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.985				0.850		0.973	
Flt Protected	0.950			0.950				0.993			0.999	
Satd. Flow (prot)	1656	1780	0	1728	1855	0	0	1842	1610	0	1940	0
Flt Permitted	0.292			0.604				0.904			0.989	
Satd. Flow (perm)	509	1780	0	1098	1855	0	0	1677	1610	0	1920	0
Satd. Flow (RTOR)		4			5				118		11	
Adj. Flow (vph)	99	218	21	100	355	39	52	299	118	9	290	74
Lane Group Flow (vph)	99	239	0	100	394	0	0	351	118	0	373	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases	5	2		1	6			4	4 5		8	
Permitted Phases	2			6			4			8		
Detector Phase	5	2		1	6		4	4	4 5	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	10.0		9.5	10.0		11.0	11.0		11.0	11.0	
Total Split (s)	13.0	45.0		13.0	45.0		41.0	41.0		41.0	41.0	
Total Split (%)	10.9%	37.8%		10.9%	37.8%		34.5%	34.5%		34.5%	34.5%	
Maximum Green (s)	10.0	40.0		10.0	40.0		35.0	35.0		35.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0			-2.0			-2.0	
Total Lost Time (s)	3.0	4.0		3.0	4.0			4.0			4.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.25	0.36		0.17	0.65			0.56	0.13		0.52	
Control Delay	11.5	19.9		10.7	26.2			21.7	2.6		19.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	11.5	19.9		10.7	26.2			21.7	2.6		19.6	
Queue Length 50th (ft)	19	73		20	136			113	0		113	
Queue Length 95th (ft)	54	161		54	272			210	21		226	
Internal Link Dist (ft)		915			371			554			550	
Turn Bay Length (ft)	300			90					250			
Base Capacity (vph)	435	1143		641	1191			970	1010		1116	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.23	0.21		0.16	0.33			0.36	0.12		0.33	

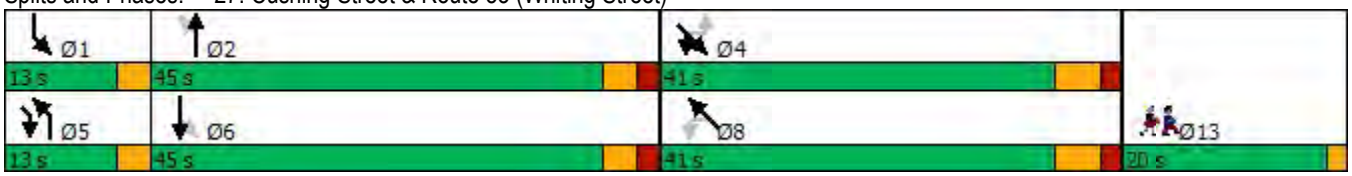
Intersection Summary
Cycle Length: 119

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	20.0
Total Split (s)	20.0
Total Split (%)	17%
Maximum Green (s)	18.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	0
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 67.6
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 27: Cushing Street & Route 53 (Whiting Street)





Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	91	201	19	92	327	36	44	254	100	8	270	69
Future Volume (vph)	91	201	19	92	327	36	44	254	100	8	270	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	11	12	12	12	12	14	14	14	14
Total Lost time (s)	3.0	4.0		3.0	4.0			4.0	6.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	0.99			1.00	0.85		0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		1.00	
Satd. Flow (prot)	1656	1780		1728	1855			1841	1610		1940	
Flt Permitted	0.29	1.00		0.60	1.00			0.90	1.00		0.99	
Satd. Flow (perm)	509	1780		1099	1855			1677	1610		1921	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.85	0.85	0.85	0.93	0.93	0.93
Adj. Flow (vph)	99	218	21	100	355	39	52	299	118	9	290	74
RTOR Reduction (vph)	0	3	0	0	3	0	0	0	52	0	7	0
Lane Group Flow (vph)	99	236	0	100	391	0	0	351	66	0	366	0
Heavy Vehicles (%)	9%	2%	0%	1%	1%	0%	5%	2%	7%	0%	1%	4%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases	5	2		1	6			4	4 5		8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	32.9	24.2		28.3	21.9			23.1	37.8		23.1	
Effective Green, g (s)	32.9	25.2		28.3	22.9			25.1	37.8		25.1	
Actuated g/C Ratio	0.49	0.37		0.42	0.34			0.37	0.56		0.37	
Clearance Time (s)	3.0	5.0		3.0	5.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	394	662		518	627			621	898		712	
v/s Ratio Prot	c0.03	0.13		0.02	c0.21				0.04			
v/s Ratio Perm	0.09			0.06				c0.21			0.19	
v/c Ratio	0.25	0.36		0.19	0.62			0.57	0.07		0.51	
Uniform Delay, d1	10.5	15.4		12.2	18.8			17.0	6.9		16.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.3	0.3		0.2	1.9			1.2	0.0		0.6	
Delay (s)	10.8	15.7		12.4	20.7			18.1	6.9		17.2	
Level of Service	B	B		B	C			B	A		B	
Approach Delay (s)		14.3			19.0			15.3			17.2	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	15.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	115	338	8	60	385	31	32	335	183	12	321	87
Future Volume (vph)	115	338	8	60	385	31	32	335	183	12	321	87
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.989				0.850		0.972	
Flt Protected	0.950			0.950				0.996			0.999	
Satd. Flow (prot)	1805	1831	0	1711	1879	0	0	1887	1706	0	1953	0
Flt Permitted	0.216			0.454				0.922			0.985	
Satd. Flow (perm)	410	1831	0	817	1879	0	0	1747	1706	0	1926	0
Satd. Flow (RTOR)		1			4				193		12	
Adj. Flow (vph)	117	345	8	66	423	34	34	353	193	13	353	96
Lane Group Flow (vph)	117	353	0	66	457	0	0	387	193	0	462	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases	5	2		1	6			4	4 5		8	
Permitted Phases	2			6			4			8		
Detector Phase	5	2		1	6		4	4	4 5	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	10.0		9.5	10.0		11.0	11.0		11.0	11.0	
Total Split (s)	13.0	45.0		13.0	45.0		41.0	41.0		41.0	41.0	
Total Split (%)	10.9%	37.8%		10.9%	37.8%		34.5%	34.5%		34.5%	34.5%	
Maximum Green (s)	10.0	40.0		10.0	40.0		35.0	35.0		35.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0			-2.0			-2.0	
Total Lost Time (s)	3.0	4.0		3.0	4.0			4.0			4.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.32	0.49		0.14	0.71			0.63	0.21		0.67	
Control Delay	15.0	24.2		13.5	31.3			29.1	2.6		29.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	15.0	24.2		13.5	31.3			29.1	2.6		29.1	
Queue Length 50th (ft)	24	119		13	172			139	0		164	
Queue Length 95th (ft)	88	317		55	422			379	31		439	
Internal Link Dist (ft)		915			371			554			550	
Turn Bay Length (ft)	300			90					250			
Base Capacity (vph)	403	1052		527	1081			905	990		1004	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.29	0.34		0.13	0.42			0.43	0.19		0.46	

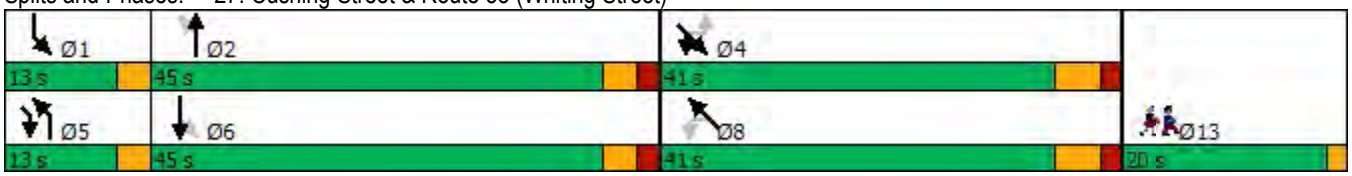
Intersection Summary
Cycle Length: 119

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	20.0
Total Split (s)	20.0
Total Split (%)	17%
Maximum Green (s)	18.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	1
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 77.9
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 27: Cushing Street & Route 53 (Whiting Street)



Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	115	338	8	60	385	31	32	335	183	12	321	87
Future Volume (vph)	115	338	8	60	385	31	32	335	183	12	321	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	11	12	12	12	12	14	14	14	14
Total Lost time (s)	3.0	4.0		3.0	4.0			4.0	6.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	0.99			1.00	0.85		0.97	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1805	1830		1711	1879			1887	1706		1952	
Flt Permitted	0.22	1.00		0.45	1.00			0.92	1.00		0.99	
Satd. Flow (perm)	410	1830		818	1879			1747	1706		1926	
Peak-hour factor, PHF	0.98	0.98	0.98	0.91	0.91	0.91	0.95	0.95	0.95	0.91	0.91	0.91
Adj. Flow (vph)	117	345	8	66	423	34	34	353	193	13	353	96
RTOR Reduction (vph)	0	1	0	0	3	0	0	0	109	0	8	0
Lane Group Flow (vph)	117	352	0	66	454	0	0	387	84	0	454	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%	3%	0%	1%	0%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases	5	2		1	6			4	4 5		8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	38.6	29.7		32.3	26.4			25.4	34.6		25.4	
Effective Green, g (s)	38.6	30.7		32.3	27.4			27.4	34.6		27.4	
Actuated g/C Ratio	0.49	0.39		0.41	0.35			0.35	0.44		0.35	
Clearance Time (s)	3.0	5.0		3.0	5.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	360	707		399	648			602	743		664	
v/s Ratio Prot	c0.04	0.19		0.01	c0.24				0.05			
v/s Ratio Perm	0.12			0.05				0.22			c0.24	
v/c Ratio	0.33	0.50		0.17	0.70			0.64	0.11		0.68	
Uniform Delay, d1	13.2	18.5		14.7	22.5			21.9	13.3		22.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.5	0.6		0.2	3.4			2.4	0.1		2.9	
Delay (s)	13.7	19.1		14.9	25.9			24.2	13.4		25.2	
Level of Service	B	B		B	C			C	B		C	
Approach Delay (s)		17.7			24.5			20.6			25.2	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	79.4	Sum of lost time (s)	15.0
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	115	200	6	76	382	52	57	378	173	7	384	71
Future Volume (vph)	115	200	6	76	382	52	57	378	173	7	384	71
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.982				0.850		0.979	
Flt Protected	0.950			0.950				0.994			0.999	
Satd. Flow (prot)	1787	1829	0	1745	1866	0	0	1876	1706	0	1982	0
Flt Permitted	0.133			0.591				0.835			0.992	
Satd. Flow (perm)	250	1829	0	1085	1866	0	0	1576	1706	0	1968	0
Satd. Flow (RTOR)		1			6				201		8	
Adj. Flow (vph)	122	213	6	88	444	60	66	440	201	8	422	78
Lane Group Flow (vph)	122	219	0	88	504	0	0	506	201	0	508	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases	5	2		1	6			4	4 5		8	
Permitted Phases	2			6			4			8		
Detector Phase	5	2		1	6		4	4	4 5	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	10.0		9.5	10.0		11.0	11.0		11.0	11.0	
Total Split (s)	13.0	45.0		13.0	45.0		41.0	41.0		41.0	41.0	
Total Split (%)	10.9%	37.8%		10.9%	37.8%		34.5%	34.5%		34.5%	34.5%	
Maximum Green (s)	10.0	40.0		10.0	40.0		35.0	35.0		35.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0			-2.0			-2.0	
Total Lost Time (s)	3.0	4.0		3.0	4.0			4.0			4.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.45	0.33		0.17	0.82			0.77	0.21		0.62	
Control Delay	19.8	24.2		15.0	40.9			36.0	2.5		28.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	19.8	24.2		15.0	40.9			36.0	2.5		28.1	
Queue Length 50th (ft)	35	86		25	246			235	0		212	
Queue Length 95th (ft)	91	192		66	446			#585	27		#527	
Internal Link Dist (ft)		915			371			554			550	
Turn Bay Length (ft)	300			90					250			
Base Capacity (vph)	288	841		562	860			653	995		821	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.42	0.26		0.16	0.59			0.77	0.20		0.62	

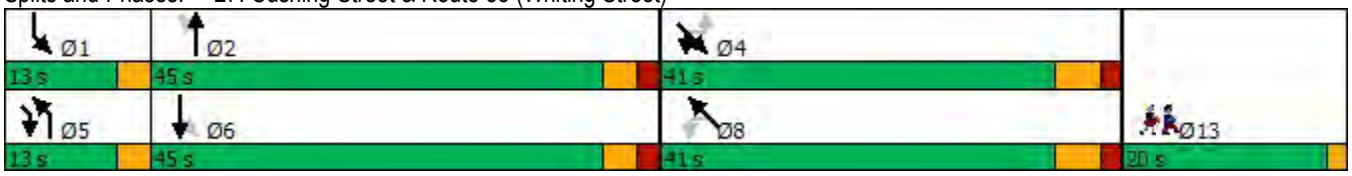
Intersection Summary
Cycle Length: 119

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	20.0
Total Split (s)	20.0
Total Split (%)	17%
Maximum Green (s)	18.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	1
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 91.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 27: Cushing Street & Route 53 (Whiting Street)



Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	115	200	6	76	382	52	57	378	173	7	384	71
Future Volume (vph)	115	200	6	76	382	52	57	378	173	7	384	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	11	12	12	12	12	14	14	14	14
Total Lost time (s)	3.0	4.0		3.0	4.0			4.0	6.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	0.98			1.00	0.85		0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		1.00	
Satd. Flow (prot)	1787	1829		1745	1866			1875	1706		1983	
Flt Permitted	0.13	1.00		0.59	1.00			0.83	1.00		0.99	
Satd. Flow (perm)	250	1829		1086	1866			1576	1706		1968	
Peak-hour factor, PHF	0.94	0.94	0.94	0.86	0.86	0.86	0.86	0.86	0.86	0.91	0.91	0.91
Adj. Flow (vph)	122	213	6	88	444	60	66	440	201	8	422	78
RTOR Reduction (vph)	0	1	0	0	4	0	0	0	104	0	5	0
Lane Group Flow (vph)	122	218	0	88	500	0	0	506	97	0	503	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	5%	0%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases	5	2		1	6			4	4 5		8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	41.7	32.4		35.9	29.5			35.9	45.2		35.9	
Effective Green, g (s)	41.7	33.4		35.9	30.5			37.9	45.2		37.9	
Actuated g/C Ratio	0.45	0.36		0.38	0.33			0.41	0.48		0.41	
Clearance Time (s)	3.0	5.0		3.0	5.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	264	653		462	608			638	824		797	
v/s Ratio Prot	c0.05	0.12		0.01	c0.27				0.06			
v/s Ratio Perm	0.16			0.06				c0.32			0.26	
v/c Ratio	0.46	0.33		0.19	0.82			0.79	0.12		0.63	
Uniform Delay, d1	18.8	21.9		18.7	29.0			24.4	13.2		22.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	1.3	0.3		0.2	8.8			6.7	0.1		1.6	
Delay (s)	20.1	22.2		18.9	37.8			31.1	13.3		23.9	
Level of Service	C	C		B	D			C	B		C	
Approach Delay (s)		21.5			35.0			26.0			23.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	93.5	Sum of lost time (s)	15.0
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Route 53 at Gardner Street and Derby Street



Lane Group	EBL2	EBL	EBR	EBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	73	253	19	14	5	8	4	22	251	28	8
Future Volume (vph)	9	73	253	19	14	5	8	4	22	251	28	8
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt			0.850			0.948					0.992	
Flt Protected		0.950				0.978				0.950	0.963	
Satd. Flow (prot)	0	1630	2697	0	0	1762	0	0	0	1574	1642	0
Flt Permitted		0.950				0.978				0.455	0.522	
Satd. Flow (perm)	0	1630	2697	0	0	1762	0	0	0	754	890	0
Satd. Flow (RTOR)			138			4					2	
Adj. Flow (vph)	11	86	298	22	20	7	11	6	27	302	34	10
Lane Group Flow (vph)	0	97	320	0	0	44	0	0	0	187	186	0
Turn Type	Prot	Prot	Perm		Split	NA			custom	Prot	NA	
Protected Phases	1	1			9	9				8		
Permitted Phases			6						8		8	
Detector Phase	1	1	6		9	9			8	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0			5.0	5.0	5.0	
Minimum Split (s)	12.0	12.0	11.0		12.0	12.0			11.0	11.0	11.0	
Total Split (s)	16.0	16.0	42.0		25.0	25.0			30.0	30.0	30.0	
Total Split (%)	10.7%	10.7%	28.0%		16.7%	16.7%			20.0%	20.0%	20.0%	
Maximum Green (s)	12.0	12.0	36.0		18.0	18.0			24.0	24.0	24.0	
Yellow Time (s)	4.0	4.0	4.0		5.0	5.0			4.0	4.0	4.0	
All-Red Time (s)	0.0	0.0	2.0		2.0	2.0			2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	-2.0			-3.0				-2.0	-2.0	
Total Lost Time (s)		4.0	4.0			4.0				4.0	4.0	
Lead/Lag	Lead	Lead			Lead	Lead						
Lead-Lag Optimize?	Yes	Yes			Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0	
Recall Mode	None	None	Min		None	None			None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.57	0.30			0.23				0.97	0.81	
Control Delay		63.1	16.8			48.3				100.8	67.2	
Queue Delay		0.0	0.0			0.0				0.0	0.0	
Total Delay		63.1	16.8			48.3				100.8	67.2	
Queue Length 50th (ft)		59	43			24				125	116	
Queue Length 95th (ft)		#160	114			58				#364	#335	
Internal Link Dist (ft)		1325				383					741	
Turn Bay Length (ft)		235								100		
Base Capacity (vph)		192	1096			367				193	229	
Starvation Cap Reductn		0	0			0				0	0	
Spillback Cap Reductn		0	0			0				0	0	
Storage Cap Reductn		0	0			0				0	0	
Reduced v/c Ratio		0.51	0.29			0.12				0.97	0.81	

Intersection Summary
Cycle Length: 150

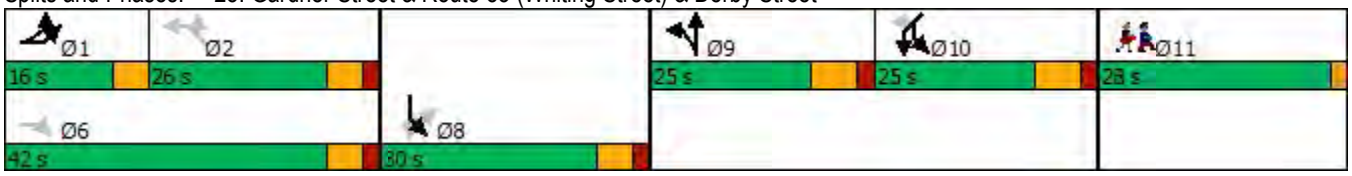


Lane Group	NWL	NWR	NWR2	SWL2	SWL	SWR	SWR2	Ø11
Lane Configurations								
Traffic Volume (vph)	459	284	11	13	10	113	45	
Future Volume (vph)	459	284	11	13	10	113	45	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	1.00	1.00	
Frt		0.850				0.850		
Flt Protected	0.950				0.950			
Satd. Flow (prot)	3351	1546	0	0	1805	1552	0	
Flt Permitted	0.955				0.950			
Satd. Flow (perm)	3369	1546	0	0	1805	1552	0	
Satd. Flow (RTOR)		167				160		
Adj. Flow (vph)	540	334	13	15	11	130	52	
Lane Group Flow (vph)	540	347	0	0	26	182	0	
Turn Type	Perm	Perm		Prot	Prot	Perm		
Protected Phases				10	10			11
Permitted Phases	2	2				10		
Detector Phase	2	2		10	10	10		
Switch Phase								
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0		5.0
Minimum Split (s)	26.0	26.0		12.0	12.0	12.0		28.0
Total Split (s)	26.0	26.0		25.0	25.0	25.0		28.0
Total Split (%)	17.3%	17.3%		16.7%	16.7%	16.7%		19%
Maximum Green (s)	20.0	20.0		18.0	18.0	18.0		26.0
Yellow Time (s)	4.0	4.0		5.0	5.0	5.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0		0.0
Lost Time Adjust (s)	-2.0	-2.0			-3.0	-3.0		
Total Lost Time (s)	4.0	4.0			4.0	4.0		
Lead/Lag	Lag	Lag		Lag	Lag	Lag		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0
Recall Mode	Min	Min		None	None	None		None
Walk Time (s)								7.0
Flash Dont Walk (s)								19.0
Pedestrian Calls (#/hr)								2
v/c Ratio	0.74	0.74			0.13	0.58		
Control Delay	47.9	32.8			48.4	18.8		
Queue Delay	0.0	0.0			0.0	0.0		
Total Delay	47.9	32.8			48.4	18.8		
Queue Length 50th (ft)	167	108			16	13		
Queue Length 95th (ft)	#357	#315			50	86		
Internal Link Dist (ft)	1855				745			
Turn Bay Length (ft)		100				85		
Base Capacity (vph)	730	466			373	448		
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	0.74	0.74			0.07	0.41		

Intersection Summary

Actuated Cycle Length: 105
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 28: Gardner Street & Route 53 (Whiting Street) & Derby Street





Movement	EBL2	EBL	EBR	EBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	73	253	19	14	5	8	4	22	251	28	8
Future Volume (vph)	9	73	253	19	14	5	8	4	22	251	28	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	12	12	12	12	10	10	11	11
Total Lost time (s)		4.0	4.0			4.0				4.0	4.0	
Lane Util. Factor		1.00	0.88			1.00				0.95	0.95	
Frt		1.00	0.85			0.95				1.00	0.99	
Flt Protected		0.95	1.00			0.98				0.95	0.96	
Satd. Flow (prot)		1630	2697			1761				1574	1642	
Flt Permitted		0.95	1.00			0.98				0.45	0.52	
Satd. Flow (perm)		1630	2697			1761				753	890	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.71	0.71	0.71	0.71	0.83	0.83	0.83	0.83
Adj. Flow (vph)	11	86	298	22	20	7	11	6	27	302	34	10
RTOR Reduction (vph)	0	0	90	0	0	4	0	0	0	0	2	0
Lane Group Flow (vph)	0	97	230	0	0	40	0	0	0	187	184	0
Heavy Vehicles (%)	22%	1%	2%	0%	0%	0%	0%	0%	0%	2%	0%	0%
Turn Type	Prot	Prot	Perm		Split	NA			custom	Prot	NA	
Protected Phases	1	1			9	9				8		
Permitted Phases			6						8		8	
Actuated Green, G (s)		10.9	35.8			6.6				24.8	24.8	
Effective Green, g (s)		10.9	37.8			9.6				26.8	26.8	
Actuated g/C Ratio		0.10	0.35			0.09				0.25	0.25	
Clearance Time (s)		4.0	6.0			7.0				6.0	6.0	
Vehicle Extension (s)		3.0	3.0			3.0				3.0	3.0	
Lane Grp Cap (vph)		165	947			157				187	221	
v/s Ratio Prot		c0.06				c0.02						
v/s Ratio Perm			0.09							c0.25	0.21	
v/c Ratio		0.59	0.24			0.26				1.00	0.83	
Uniform Delay, d1		46.2	24.8			45.7				40.4	38.3	
Progression Factor		1.00	1.00			1.00				1.00	1.00	
Incremental Delay, d2		5.3	0.1			0.9				65.8	22.9	
Delay (s)		51.5	24.9			46.5				106.2	61.2	
Level of Service		D	C			D				F	E	
Approach Delay (s)		31.1				46.5					83.8	
Approach LOS		C				D					F	

Intersection Summary			
HCM 2000 Control Delay	49.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	107.6	Sum of lost time (s)	30.0
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



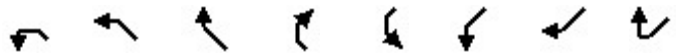
Movement	NWL	NWR	NWR2	SWL2	SWL	SWR	SWR2
Lane Configurations							
Traffic Volume (vph)	459	284	11	13	10	113	45
Future Volume (vph)	459	284	11	13	10	113	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	11	11
Total Lost time (s)	4.0	4.0			4.0	4.0	
Lane Util. Factor	0.97	1.00			1.00	1.00	
Frt	1.00	0.85			1.00	0.85	
Flt Protected	0.95	1.00			0.95	1.00	
Satd. Flow (prot)	3351	1546			1805	1552	
Flt Permitted	0.95	1.00			0.95	1.00	
Satd. Flow (perm)	3369	1546			1805	1552	
Peak-hour factor, PHF	0.85	0.85	0.85	0.87	0.87	0.87	0.87
Adj. Flow (vph)	540	334	13	15	11	130	52
RTOR Reduction (vph)	0	131	0	0	0	143	0
Lane Group Flow (vph)	540	216	0	0	26	39	0
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%	2%
Turn Type	Perm	Perm		Prot	Prot	Perm	
Protected Phases				10	10		
Permitted Phases	2	2				10	
Actuated Green, G (s)	20.9	20.9			8.6	8.6	
Effective Green, g (s)	22.9	22.9			11.6	11.6	
Actuated g/C Ratio	0.21	0.21			0.11	0.11	
Clearance Time (s)	6.0	6.0			7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	
Lane Grp Cap (vph)	717	329			194	167	
v/s Ratio Prot					0.01		
v/s Ratio Perm	c0.16	0.14				c0.03	
v/c Ratio	0.75	0.66			0.13	0.24	
Uniform Delay, d1	39.7	38.7			43.5	43.9	
Progression Factor	1.00	1.00			1.00	1.00	
Incremental Delay, d2	4.5	4.6			0.3	0.7	
Delay (s)	44.2	43.4			43.8	44.7	
Level of Service	D	D			D	D	
Approach Delay (s)	43.9				44.6		
Approach LOS	D				D		

Intersection Summary



Lane Group	EBL2	EBL	EBR	EBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	113	573	64	38	65	17	1	17	343	45	11
Future Volume (vph)	20	113	573	64	38	65	17	1	17	343	45	11
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt			0.850			0.980					0.992	
Flt Protected		0.950				0.985				0.950	0.965	
Satd. Flow (prot)	0	1685	2748	0	0	1814	0	0	0	1600	1670	0
Flt Permitted		0.950				0.985				0.317	0.387	
Satd. Flow (perm)	0	1685	2748	0	0	1814	0	0	0	534	670	0
Satd. Flow (RTOR)			138								2	
Adj. Flow (vph)	21	119	603	67	50	86	22	1	18	357	47	11
Lane Group Flow (vph)	0	140	670	0	0	159	0	0	0	214	219	0
Turn Type	Prot	Prot	Perm		Split	NA			custom	Prot	NA	
Protected Phases	1	1			9	9				8		
Permitted Phases			6						8		8	
Detector Phase	1	1	6		9	9			8	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0			5.0	5.0	5.0	
Minimum Split (s)	12.0	12.0	11.0		12.0	12.0			11.0	11.0	11.0	
Total Split (s)	16.0	16.0	42.0		25.0	25.0			30.0	30.0	30.0	
Total Split (%)	10.7%	10.7%	28.0%		16.7%	16.7%			20.0%	20.0%	20.0%	
Maximum Green (s)	12.0	12.0	36.0		18.0	18.0			24.0	24.0	24.0	
Yellow Time (s)	4.0	4.0	4.0		5.0	5.0			4.0	4.0	4.0	
All-Red Time (s)	0.0	0.0	2.0		2.0	2.0			2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	-2.0			-3.0				-2.0	-2.0	
Total Lost Time (s)		4.0	4.0			4.0				4.0	4.0	
Lead/Lag	Lead	Lead			Lead	Lead						
Lead-Lag Optimize?	Yes	Yes			Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0	
Recall Mode	None	None	Min		None	None			None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.74	0.63			0.55				1.66	1.34	
Control Delay		71.7	26.3			49.1				358.7	224.1	
Queue Delay		0.0	0.0			0.0				0.0	0.0	
Total Delay		71.7	26.3			49.1				358.7	224.1	
Queue Length 50th (ft)		95	173			102				~227	~209	
Queue Length 95th (ft)		#206	260			142				#405	#390	
Internal Link Dist (ft)		1325				383					741	
Turn Bay Length (ft)		235								100		
Base Capacity (vph)		188	1060			354				129	163	
Starvation Cap Reductn		0	0			0				0	0	
Spillback Cap Reductn		0	0			0				0	0	
Storage Cap Reductn		0	0			0				0	0	
Reduced v/c Ratio		0.74	0.63			0.45				1.66	1.34	

Intersection Summary
Cycle Length: 150

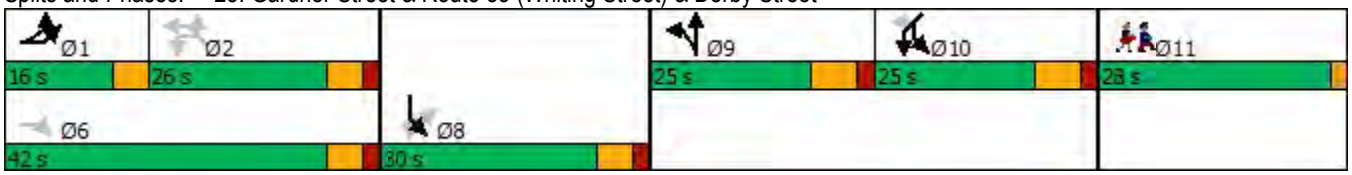


Lane Group	NWL2	NWL	NWR	NWR2	SWL2	SWL	SWR	SWR2	Ø11
Lane Configurations									
Traffic Volume (vph)	1	460	309	8	18	6	85	12	
Future Volume (vph)	1	460	309	8	18	6	85	12	
Lane Util. Factor	0.95	0.97	1.00	0.95	1.00	1.00	1.00	1.00	
Frt			0.850				0.850		
Flt Protected		0.950				0.950			
Satd. Flow (prot)	0	3385	1561	0	0	1805	1561	0	
Flt Permitted		0.954				0.950			
Satd. Flow (perm)	0	3399	1561	0	0	1805	1561	0	
Satd. Flow (RTOR)			167				160		
Adj. Flow (vph)	1	495	332	9	22	7	104	15	
Lane Group Flow (vph)	0	496	341	0	0	29	119	0	
Turn Type	Perm	Perm	Perm		Prot	Prot	Perm		
Protected Phases					10	10			11
Permitted Phases	2	2	2				10		
Detector Phase	2	2	2		10	10	10		
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0	5.0		5.0
Minimum Split (s)	26.0	26.0	26.0		12.0	12.0	12.0		28.0
Total Split (s)	26.0	26.0	26.0		25.0	25.0	25.0		28.0
Total Split (%)	17.3%	17.3%	17.3%		16.7%	16.7%	16.7%		19%
Maximum Green (s)	20.0	20.0	20.0		18.0	18.0	18.0		26.0
Yellow Time (s)	4.0	4.0	4.0		5.0	5.0	5.0		2.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0		0.0
Lost Time Adjust (s)		-2.0	-2.0			-3.0	-3.0		
Total Lost Time (s)		4.0	4.0			4.0	4.0		
Lead/Lag	Lag	Lag	Lag		Lag	Lag	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0		3.0
Recall Mode	Min	Min	Min		None	None	None		None
Walk Time (s)									7.0
Flash Dont Walk (s)									19.0
Pedestrian Calls (#/hr)									0
v/c Ratio		0.71	0.75			0.17	0.41		
Control Delay		47.1	32.6			48.1	7.1		
Queue Delay		0.0	0.0			0.0	0.0		
Total Delay		47.1	32.6			48.1	7.1		
Queue Length 50th (ft)		165	115			19	0		
Queue Length 95th (ft)		237	#263			45	13		
Internal Link Dist (ft)		1855				745			
Turn Bay Length (ft)			100				85		
Base Capacity (vph)		695	452			352	433		
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		0.71	0.75			0.08	0.27		

Intersection Summary

Actuated Cycle Length: 107.7
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
~ 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: 28: Gardner Street & Route 53 (Whiting Street) & Derby Street

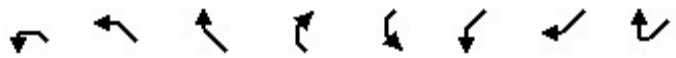




Movement	EBL2	EBL	EBR	EBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	113	573	64	38	65	17	1	17	343	45	11
Future Volume (vph)	20	113	573	64	38	65	17	1	17	343	45	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	12	12	12	12	10	10	11	11
Total Lost time (s)		4.0	4.0			4.0				4.0	4.0	
Lane Util. Factor		1.00	0.88			1.00				0.95	0.95	
Frt		1.00	0.85			0.98				1.00	0.99	
Flt Protected		0.95	1.00			0.98				0.95	0.96	
Satd. Flow (prot)		1685	2748			1814				1600	1670	
Flt Permitted		0.95	1.00			0.98				0.32	0.39	
Satd. Flow (perm)		1685	2748			1814				534	670	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.76	0.76	0.76	0.76	0.96	0.96	0.96	0.96
Adj. Flow (vph)	21	119	603	67	50	86	22	1	18	357	47	11
RTOR Reduction (vph)	0	0	89	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	140	581	0	0	159	0	0	0	214	217	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	Prot	Perm		Split	NA			custom	Prot	NA	
Protected Phases	1	1			9	9				8		
Permitted Phases			6						8		8	
Actuated Green, G (s)		12.0	36.1			14.3				24.0	24.0	
Effective Green, g (s)		12.0	38.1			17.3				26.0	26.0	
Actuated g/C Ratio		0.11	0.35			0.16				0.24	0.24	
Clearance Time (s)		4.0	6.0			7.0				6.0	6.0	
Vehicle Extension (s)		3.0	3.0			3.0				3.0	3.0	
Lane Grp Cap (vph)		187	973			291				129	161	
v/s Ratio Prot		c0.08				c0.09						
v/s Ratio Perm			0.21							c0.40	0.32	
v/c Ratio		0.75	0.60			0.55				1.66	1.35	
Uniform Delay, d1		46.3	28.5			41.5				40.8	40.8	
Progression Factor		1.00	1.00			1.00				1.00	1.00	
Incremental Delay, d2		15.1	1.0			2.1				328.2	193.1	
Delay (s)		61.4	29.5			43.6				369.0	233.9	
Level of Service		E	C			D				F	F	
Approach Delay (s)		35.0				43.6					300.7	
Approach LOS		C				D					F	

Intersection Summary			
HCM 2000 Control Delay	87.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	107.6	Sum of lost time (s)	30.0
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	NWL2	NWL	NWR	NWR2	SWL2	SWL	SWR	SWR2
Lane Configurations								
Traffic Volume (vph)	1	460	309	8	18	6	85	12
Future Volume (vph)	1	460	309	8	18	6	85	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	12	11	11
Total Lost time (s)		4.0	4.0			4.0	4.0	
Lane Util. Factor		0.97	1.00			1.00	1.00	
Frt		1.00	0.85			1.00	0.85	
Flt Protected		0.95	1.00			0.95	1.00	
Satd. Flow (prot)		3385	1561			1805	1561	
Flt Permitted		0.95	1.00			0.95	1.00	
Satd. Flow (perm)		3398	1561			1805	1561	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.82	0.82	0.82	0.82
Adj. Flow (vph)	1	495	332	9	22	7	104	15
RTOR Reduction (vph)	0	0	133	0	0	0	108	0
Lane Group Flow (vph)	0	496	208	0	0	29	11	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	Perm	Perm		Prot	Prot	Perm	
Protected Phases					10	10		
Permitted Phases	2	2	2				10	
Actuated Green, G (s)		20.1	20.1			7.2	7.2	
Effective Green, g (s)		22.1	22.1			10.2	10.2	
Actuated g/C Ratio		0.21	0.21			0.09	0.09	
Clearance Time (s)		6.0	6.0			7.0	7.0	
Vehicle Extension (s)		3.0	3.0			3.0	3.0	
Lane Grp Cap (vph)		697	320			171	147	
v/s Ratio Prot						c0.02		
v/s Ratio Perm		c0.15	0.13				0.01	
v/c Ratio		0.71	0.65			0.17	0.08	
Uniform Delay, d1		39.8	39.2			44.8	44.4	
Progression Factor		1.00	1.00			1.00	1.00	
Incremental Delay, d2		3.4	4.7			0.5	0.2	
Delay (s)		43.2	43.9			45.3	44.6	
Level of Service		D	D			D	D	
Approach Delay (s)		43.5				44.8		
Approach LOS		D				D		

Intersection Summary



Lane Group	EBL2	EBL	EBR	EBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	63	522	41	67	66	5	3	28	352	40	8
Future Volume (vph)	19	63	522	41	67	66	5	3	28	352	40	8
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt			0.850			0.992					0.994	
Flt Protected		0.950				0.977				0.950	0.962	
Satd. Flow (prot)	0	1666	2748	0	0	1841	0	0	0	1600	1668	0
Flt Permitted		0.950				0.977				0.475	0.537	
Satd. Flow (perm)	0	1666	2748	0	0	1841	0	0	0	800	931	0
Satd. Flow (RTOR)			138			1					1	
Adj. Flow (vph)	20	67	555	44	94	93	7	4	30	383	43	9
Lane Group Flow (vph)	0	87	599	0	0	198	0	0	0	229	236	0
Turn Type	Prot	Prot	Perm		Split	NA			custom	Prot	NA	
Protected Phases	1	1			9	9				8		
Permitted Phases			6						8		8	
Detector Phase	1	1	6		9	9			8	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0			5.0	5.0	5.0	
Minimum Split (s)	12.0	12.0	11.0		12.0	12.0			11.0	11.0	11.0	
Total Split (s)	16.0	16.0	42.0		25.0	25.0			30.0	30.0	30.0	
Total Split (%)	10.7%	10.7%	28.0%		16.7%	16.7%			20.0%	20.0%	20.0%	
Maximum Green (s)	12.0	12.0	36.0		18.0	18.0			24.0	24.0	24.0	
Yellow Time (s)	4.0	4.0	4.0		5.0	5.0			4.0	4.0	4.0	
All-Red Time (s)	0.0	0.0	2.0		2.0	2.0			2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	-2.0			-3.0				-2.0	-2.0	
Total Lost Time (s)		4.0	4.0			4.0				4.0	4.0	
Lead/Lag	Lead	Lead			Lead	Lead						
Lead-Lag Optimize?	Yes	Yes			Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0	
Recall Mode	None	None	Min		None	None			None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.56	0.61			0.64				1.24	1.09	
Control Delay		67.2	29.1			55.9				181.9	129.2	
Queue Delay		0.0	0.0			0.0				0.0	0.0	
Total Delay		67.2	29.1			55.9				181.9	129.2	
Queue Length 50th (ft)		59	149			127				~207	~192	
Queue Length 95th (ft)		#153	306			205				#503	#497	
Internal Link Dist (ft)		1325				383					741	
Turn Bay Length (ft)		235								100		
Base Capacity (vph)		178	1025			346				185	217	
Starvation Cap Reductn		0	0			0				0	0	
Spillback Cap Reductn		0	0			0				0	0	
Storage Cap Reductn		0	0			0				0	0	
Reduced v/c Ratio		0.49	0.58			0.57				1.24	1.09	

Intersection Summary
Cycle Length: 150

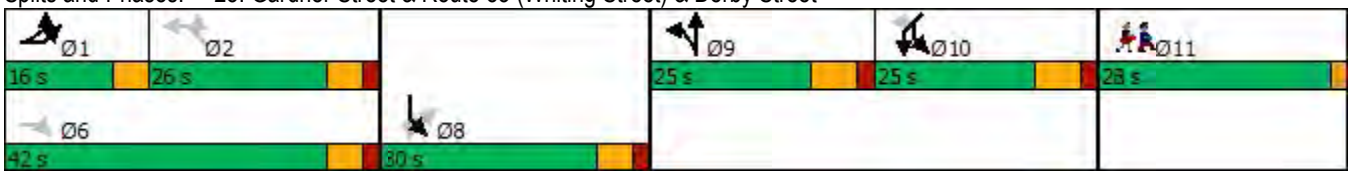


Lane Group	NWL	NWR	NWR2	SWL2	SWL	SWR	SWR2	Ø11
Lane Configurations								
Traffic Volume (vph)	538	305	23	12	3	91	23	
Future Volume (vph)	538	305	23	12	3	91	23	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	1.00	1.00	
Frt		0.850				0.850		
Flt Protected	0.950				0.950			
Satd. Flow (prot)	3385	1561	0	0	1805	1536	0	
Flt Permitted	0.955				0.950			
Satd. Flow (perm)	3403	1561	0	0	1805	1536	0	
Satd. Flow (RTOR)		167				160		
Adj. Flow (vph)	566	321	24	16	4	118	30	
Lane Group Flow (vph)	566	345	0	0	20	148	0	
Turn Type	Perm	Perm		Prot	Prot	Perm		
Protected Phases				10	10			11
Permitted Phases	2	2				10		
Detector Phase	2	2		10	10	10		
Switch Phase								
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0		5.0
Minimum Split (s)	26.0	26.0		12.0	12.0	12.0		28.0
Total Split (s)	26.0	26.0		25.0	25.0	25.0		28.0
Total Split (%)	17.3%	17.3%		16.7%	16.7%	16.7%		19%
Maximum Green (s)	20.0	20.0		18.0	18.0	18.0		26.0
Yellow Time (s)	4.0	4.0		5.0	5.0	5.0		2.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0		0.0
Lost Time Adjust (s)	-2.0	-2.0			-3.0	-3.0		
Total Lost Time (s)	4.0	4.0			4.0	4.0		
Lead/Lag	Lag	Lag		Lag	Lag	Lag		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0
Recall Mode	Min	Min		None	None	None		None
Walk Time (s)								7.0
Flash Dont Walk (s)								19.0
Pedestrian Calls (#/hr)								6
v/c Ratio	0.84	0.78			0.12	0.52		
Control Delay	57.9	36.8			53.7	13.7		
Queue Delay	0.0	0.0			0.0	0.0		
Total Delay	57.9	36.8			53.7	13.7		
Queue Length 50th (ft)	197	121			13	0		
Queue Length 95th (ft)	#427	#362			39	27		
Internal Link Dist (ft)	1855				745			
Turn Bay Length (ft)		100				85		
Base Capacity (vph)	670	441			339	418		
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	0.84	0.78			0.06	0.35		

Intersection Summary

Actuated Cycle Length: 113.6
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
~ 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: 28: Gardner Street & Route 53 (Whiting Street) & Derby Street





Movement	EBL2	EBL	EBR	EBR2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	63	522	41	67	66	5	3	28	352	40	8
Future Volume (vph)	19	63	522	41	67	66	5	3	28	352	40	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	11	11	12	12	12	12	10	10	11	11
Total Lost time (s)		4.0	4.0			4.0				4.0	4.0	
Lane Util. Factor		1.00	0.88			1.00				0.95	0.95	
Frt		1.00	0.85			0.99				1.00	0.99	
Flt Protected		0.95	1.00			0.98				0.95	0.96	
Satd. Flow (prot)		1666	2748			1842				1600	1670	
Flt Permitted		0.95	1.00			0.98				0.47	0.54	
Satd. Flow (perm)		1666	2748			1842				800	932	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.71	0.71	0.71	0.71	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	67	555	44	94	93	7	4	30	383	43	9
RTOR Reduction (vph)	0	0	94	0	0	1	0	0	0	0	1	0
Lane Group Flow (vph)	0	87	505	0	0	197	0	0	0	229	235	0
Heavy Vehicles (%)	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	Prot	Perm		Split	NA			custom	Prot	NA	
Protected Phases	1	1			9	9				8		
Permitted Phases			6						8		8	
Actuated Green, G (s)		10.5	34.9			16.1				24.4	24.4	
Effective Green, g (s)		10.5	36.9			19.1				26.4	26.4	
Actuated g/C Ratio		0.09	0.32			0.17				0.23	0.23	
Clearance Time (s)		4.0	6.0			7.0				6.0	6.0	
Vehicle Extension (s)		3.0	3.0			3.0				3.0	3.0	
Lane Grp Cap (vph)		152	883			306				183	214	
v/s Ratio Prot		0.05				c0.11						
v/s Ratio Perm			c0.18							c0.29	0.25	
v/c Ratio		0.57	0.57			0.64				1.25	1.10	
Uniform Delay, d1		50.0	32.4			44.7				44.2	44.2	
Progression Factor		1.00	1.00			1.00				1.00	1.00	
Incremental Delay, d2		5.1	0.9			4.6				150.0	90.6	
Delay (s)		55.1	33.3			49.3				194.2	134.8	
Level of Service		E	C			D				F	F	
Approach Delay (s)		36.1				49.3					164.1	
Approach LOS		D				D					F	

Intersection Summary			
HCM 2000 Control Delay	68.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	114.8	Sum of lost time (s)	30.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	NWL	NWR	NWR2	SWL2	SWL	SWR	SWR2
Lane Configurations							
Traffic Volume (vph)	538	305	23	12	3	91	23
Future Volume (vph)	538	305	23	12	3	91	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	11	11
Total Lost time (s)	4.0	4.0			4.0	4.0	
Lane Util. Factor	0.97	1.00			1.00	1.00	
Frt	1.00	0.85			1.00	0.85	
Flt Protected	0.95	1.00			0.95	1.00	
Satd. Flow (prot)	3385	1561			1805	1536	
Flt Permitted	0.95	1.00			0.95	1.00	
Satd. Flow (perm)	3403	1561			1805	1536	
Peak-hour factor, PHF	0.95	0.95	0.95	0.77	0.77	0.77	0.77
Adj. Flow (vph)	566	321	24	16	4	118	30
RTOR Reduction (vph)	0	134	0	0	0	135	0
Lane Group Flow (vph)	566	211	0	0	20	13	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	4%
Turn Type	Perm	Perm		Prot	Prot	Perm	
Protected Phases				10	10		
Permitted Phases	2	2				10	
Actuated Green, G (s)	20.4	20.4			7.3	7.3	
Effective Green, g (s)	22.4	22.4			10.3	10.3	
Actuated g/C Ratio	0.20	0.20			0.09	0.09	
Clearance Time (s)	6.0	6.0			7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	
Lane Grp Cap (vph)	664	304			161	137	
v/s Ratio Prot					c0.01		
v/s Ratio Perm	c0.17	0.13				0.01	
v/c Ratio	0.85	0.69			0.12	0.10	
Uniform Delay, d1	44.6	43.0			48.1	48.0	
Progression Factor	1.00	1.00			1.00	1.00	
Incremental Delay, d2	10.3	6.7			0.3	0.3	
Delay (s)	54.9	49.7			48.4	48.3	
Level of Service	D	D			D	D	
Approach Delay (s)	52.9				48.3		
Approach LOS	D				D		

Intersection Summary

Route 53 at Farm Hills Lane

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	520	2	4	771	1	12
Future Vol, veh/h	520	2	4	771	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	565	2	4	838	1	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	567	0	993	284
Stage 1	-	-	-	-	566	-
Stage 2	-	-	-	-	427	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1001	-	242	713
Stage 1	-	-	-	-	532	-
Stage 2	-	-	-	-	626	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1001	-	240	713
Mov Cap-2 Maneuver	-	-	-	-	240	-
Stage 1	-	-	-	-	532	-
Stage 2	-	-	-	-	622	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	619	-	-	1001	-
HCM Lane V/C Ratio	0.023	-	-	0.004	-
HCM Control Delay (s)	11	-	-	8.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	925	7	9	792	5	9
Future Vol, veh/h	925	7	9	792	5	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	91	91	58	58
Heavy Vehicles, %	0	0	11	0	0	0
Mvmt Flow	984	7	10	870	9	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	991	0	1443	496
Stage 1	-	-	-	-	988	-
Stage 2	-	-	-	-	455	-
Critical Hdwy	-	-	4.32	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.31	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	641	-	125	525
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	611	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	641	-	121	525
Mov Cap-2 Maneuver	-	-	-	-	121	-
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	593	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	21.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	239	-	-	641	-
HCM Lane V/C Ratio	0.101	-	-	0.015	-
HCM Control Delay (s)	21.7	-	-	10.7	0.2
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	915	4	8	900	1	3
Future Vol, veh/h	915	4	8	900	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	95	95	50	50
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	943	4	8	947	2	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	947	0	1435	474
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	490	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	733	-	127	542
Stage 1	-	-	-	-	343	-
Stage 2	-	-	-	-	587	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	733	-	124	542
Mov Cap-2 Maneuver	-	-	-	-	124	-
Stage 1	-	-	-	-	343	-
Stage 2	-	-	-	-	573	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	17.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	294	-	-	733	-
HCM Lane V/C Ratio	0.027	-	-	0.011	-
HCM Control Delay (s)	17.6	-	-	10	0.1
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Main Street (Route 228) at Gardner Street (North)

Intersection	
Int Delay, s/veh	13.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	72	3	20	8	4	9	20	641	4	7	613	111
Future Vol, veh/h	72	3	20	8	4	9	20	641	4	7	613	111
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	91	91	91	75	75	75	95	95	95	80	80	80
Heavy Vehicles, %	1	0	0	8	4	9	0	4	0	0	3	2
Mvmt Flow	79	3	22	11	5	12	21	675	4	9	766	139

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1582	1575	836	1585	1642	677	905	0	0	679	0	0
Stage 1	854	854	-	719	719	-	-	-	-	-	-	-
Stage 2	728	721	-	866	923	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.5	6.2	7.18	6.54	6.29	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.11	5.5	-	6.18	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.5	-	6.18	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4	3.3	3.572	4.036	3.381	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	88	111	370	85	99	441	760	-	-	923	-	-
Stage 1	355	378	-	410	430	-	-	-	-	-	-	-
Stage 2	416	435	-	340	346	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 78	104	370	74	93	441	760	-	-	923	-	-
Mov Cap-2 Maneuver	~ 78	104	-	74	93	-	-	-	-	-	-	-
Stage 1	339	370	-	392	411	-	-	-	-	-	-	-
Stage 2	382	416	-	311	339	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	208.7	43.1	0.3	0.1
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	760	-	-	94	122	923	-	-
HCM Lane V/C Ratio	0.028	-	-	1.111	0.23	0.009	-	-
HCM Control Delay (s)	9.9	0	-	208.7	43.1	8.9	0	-
HCM Lane LOS	A	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	6.9	0.8	0	-	-

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

Intersection	
Int Delay, s/veh	75.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	105	5	14	11	6	14	17	644	6	13	755	77
Future Vol, veh/h	105	5	14	11	6	14	17	644	6	13	755	77
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	72	72	72	52	52	52	93	93	93	90	90	90
Heavy Vehicles, %	1	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	146	7	19	21	12	27	18	692	6	14	839	86

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1661	1644	882	1654	1684	695	925	0	0	698	0	0
Stage 1	910	910	-	731	731	-	-	-	-	-	-	-
Stage 2	751	734	-	923	953	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.11	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 78	101	348	79	95	446	747	-	-	908	-	-
Stage 1	330	356	-	416	430	-	-	-	-	-	-	-
Stage 2	404	429	-	326	340	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 62	94	348	67	88	446	747	-	-	908	-	-
Mov Cap-2 Maneuver	~ 62	94	-	67	88	-	-	-	-	-	-	-
Stage 1	317	345	-	400	413	-	-	-	-	-	-	-
Stage 2	355	412	-	292	329	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 808.4	63.2	0.3	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	747	-	-	69	118	908	-	-
HCM Lane V/C Ratio	0.024	-	-	2.496	0.505	0.016	-	-
HCM Control Delay (s)	9.9	0	-	$ 808.4	63.2	9	0	-
HCM Lane LOS	A	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	16.8	2.3	0	-	-

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

Intersection	
Int Delay, s/veh	25.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	84	8	14	12	5	6	14	619	9	5	600	90
Future Vol, veh/h	84	8	14	12	5	6	14	619	9	5	600	90
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	72	72	72	64	64	64	88	88	88	93	93	93
Heavy Vehicles, %	2	0	0	0	0	0	0	1	0	0	2	0
Mvmt Flow	117	11	19	19	8	9	16	703	10	5	645	97

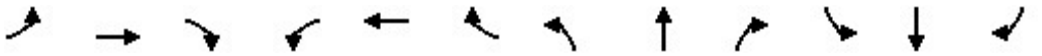
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1453	1449	694	1459	1492	708	742	0	0	713	0	0
Stage 1	704	704	-	740	740	-	-	-	-	-	-	-
Stage 2	749	745	-	719	752	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 108	132	446	108	125	438	874	-	-	896	-	-
Stage 1	428	443	-	412	426	-	-	-	-	-	-	-
Stage 2	404	424	-	423	421	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 97	127	446	94	120	438	874	-	-	896	-	-
Mov Cap-2 Maneuver	~ 97	127	-	94	120	-	-	-	-	-	-	-
Stage 1	415	439	-	400	413	-	-	-	-	-	-	-
Stage 2	376	411	-	390	417	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	273.6	44.6	0.2	0.1
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	874	-	-	110	126	896	-	-
HCM Lane V/C Ratio	0.018	-	-	1.338	0.285	0.006	-	-
HCM Control Delay (s)	9.2	0	-	273.6	44.6	9	0	-
HCM Lane LOS	A	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	10.1	1.1	0	-	-

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

Route 228 at Route 53

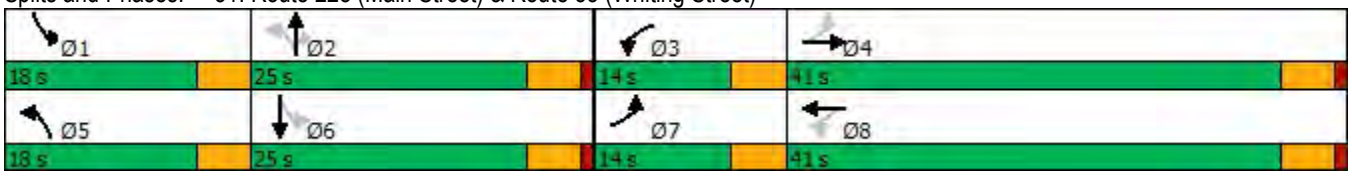


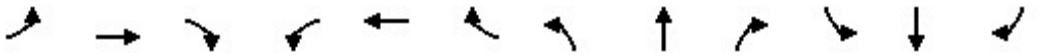
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	394	175	187	568	216	205	384	128	203	345	60
Future Volume (vph)	63	394	175	187	568	216	205	384	128	203	345	60
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.954			0.959				0.850		0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1745	3344	0	1869	3304	0	1787	1827	1501	1770	3428	0
Flt Permitted	0.185			0.219			0.306			0.185		
Satd. Flow (perm)	340	3344	0	431	3304	0	576	1827	1501	345	3428	0
Satd. Flow (RTOR)		83			65				111		18	
Adj. Flow (vph)	72	453	201	203	617	235	218	409	136	267	454	79
Lane Group Flow (vph)	72	654	0	203	852	0	218	409	136	267	533	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	25.0		10.0	23.0		10.0	25.0	25.0	10.0	25.0	
Total Split (s)	14.0	41.0		14.0	41.0		18.0	25.0	25.0	18.0	25.0	
Total Split (%)	14.3%	41.8%		14.3%	41.8%		18.4%	25.5%	25.5%	18.4%	25.5%	
Maximum Green (s)	10.0	36.0		10.0	36.0		14.0	20.0	20.0	14.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	1.0		0.0	1.0		0.0	1.0	1.0	0.0	1.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0		0.0	-1.0	-1.0	0.0	-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		13.0			10.0			13.0	13.0		13.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
v/c Ratio	0.28	0.61		0.58	0.71		0.57	0.90	0.30	0.75	0.58	
Control Delay	15.4	24.4		20.8	26.5		23.7	59.2	11.3	34.8	31.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	15.4	24.4		20.8	26.5		23.7	59.2	11.3	34.8	31.9	
Queue Length 50th (ft)	21	140		65	202		74	223	11	94	132	
Queue Length 95th (ft)	42	184		106	279		149	#463	62	#155	175	
Internal Link Dist (ft)		1646			278			778			626	
Turn Bay Length (ft)	110			200			170		140	165		
Base Capacity (vph)	309	1510		359	1482		438	453	456	381	914	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.23	0.43		0.57	0.57		0.50	0.90	0.30	0.70	0.58	

Intersection Summary
Cycle Length: 98

Actuated Cycle Length: 85.9
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 31: Route 228 (Main Street) & Route 53 (Whiting Street)

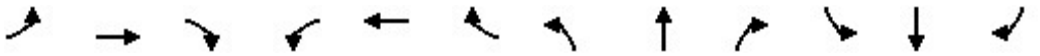




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	394	175	187	568	216	205	384	128	203	345	60
Future Volume (vph)	63	394	175	187	568	216	205	384	128	203	345	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	14	11	11	12	12	11	12	12	13
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.95		1.00	0.96		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1745	3343		1869	3303		1787	1827	1501	1770	3427	
Flt Permitted	0.18	1.00		0.22	1.00		0.31	1.00	1.00	0.19	1.00	
Satd. Flow (perm)	339	3343		432	3303		576	1827	1501	345	3427	
Peak-hour factor, PHF	0.87	0.87	0.87	0.92	0.92	0.92	0.94	0.94	0.94	0.76	0.76	0.76
Adj. Flow (vph)	72	453	201	203	617	235	218	409	136	267	454	79
RTOR Reduction (vph)	0	57	0	0	42	0	0	0	84	0	13	0
Lane Group Flow (vph)	72	597	0	203	810	0	218	409	52	267	520	0
Heavy Vehicles (%)	0%	3%	3%	3%	1%	2%	1%	4%	4%	2%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	32.3	26.0		38.7	29.2		32.0	20.4	20.4	34.4	21.6	
Effective Green, g (s)	32.3	27.0		38.7	30.2		32.0	21.4	21.4	34.4	22.6	
Actuated g/C Ratio	0.37	0.31		0.45	0.35		0.37	0.25	0.25	0.40	0.26	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	228	1041		350	1150		374	450	370	347	893	
v/s Ratio Prot	0.02	0.18		c0.06	c0.25		0.08	c0.22		c0.11	0.15	
v/s Ratio Perm	0.09			0.20			0.14		0.03	0.19		
v/c Ratio	0.32	0.57		0.58	0.70		0.58	0.91	0.14	0.77	0.58	
Uniform Delay, d1	18.7	25.0		16.3	24.4		20.0	31.7	25.5	20.5	27.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.8	0.8		2.3	2.0		2.3	21.9	0.2	9.9	1.0	
Delay (s)	19.5	25.8		18.6	26.4		22.3	53.6	25.7	30.3	28.9	
Level of Service	B	C		B	C		C	D	C	C	C	
Approach Delay (s)		25.2			24.9			39.7			29.4	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	86.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

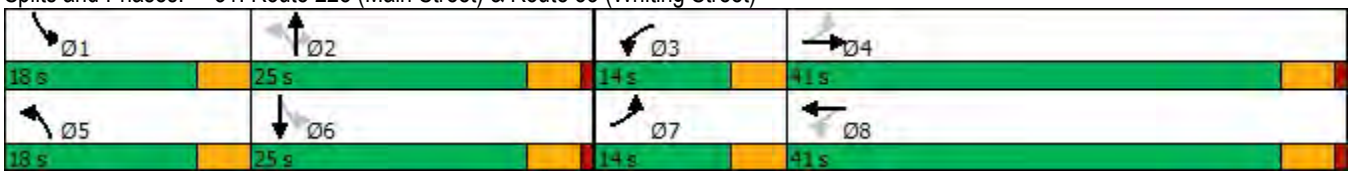


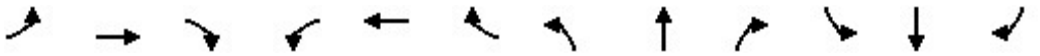
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	682	174	187	566	252	210	361	301	266	472	55
Future Volume (vph)	75	682	174	187	566	252	210	361	301	266	472	55
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.970			0.954				0.850		0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1728	3495	0	1888	3329	0	1787	1900	1561	1787	3513	0
Flt Permitted	0.204			0.122			0.233			0.185		
Satd. Flow (perm)	371	3495	0	242	3329	0	438	1900	1561	348	3513	0
Satd. Flow (RTOR)		37			83				257		12	
Adj. Flow (vph)	80	726	185	195	590	263	223	384	320	302	536	63
Lane Group Flow (vph)	80	911	0	195	853	0	223	384	320	302	599	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	25.0		10.0	23.0		10.0	25.0	25.0	10.0	25.0	
Total Split (s)	14.0	41.0		14.0	41.0		18.0	25.0	25.0	18.0	25.0	
Total Split (%)	14.3%	41.8%		14.3%	41.8%		18.4%	25.5%	25.5%	18.4%	25.5%	
Maximum Green (s)	10.0	36.0		10.0	36.0		14.0	20.0	20.0	14.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	1.0		0.0	1.0		0.0	1.0	1.0	0.0	1.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0		0.0	-1.0	-1.0	0.0	-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		13.0			10.0			13.0	13.0		13.0	
Pedestrian Calls (#/hr)		0			0			0	0		0	
v/c Ratio	0.29	0.75		0.69	0.64		0.67	0.88	0.58	0.85	0.68	
Control Delay	15.3	29.8		30.1	23.9		29.3	59.2	12.6	45.7	36.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	15.3	29.8		30.1	23.9		29.3	59.2	12.6	45.7	36.7	
Queue Length 50th (ft)	24	236		62	197		86	222	30	122	169	
Queue Length 95th (ft)	47	306		#146	272		152	#415	117	#282	240	
Internal Link Dist (ft)		1646			278			778			626	
Turn Bay Length (ft)	110			200			170		140	165		
Base Capacity (vph)	317	1449		295	1416		376	440	559	361	879	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.25	0.63		0.66	0.60		0.59	0.87	0.57	0.84	0.68	

Intersection Summary
Cycle Length: 98

Actuated Cycle Length: 91.2
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 31: Route 228 (Main Street) & Route 53 (Whiting Street)

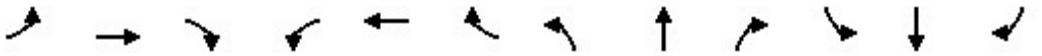




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	682	174	187	566	252	210	361	301	266	472	55
Future Volume (vph)	75	682	174	187	566	252	210	361	301	266	472	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	14	11	11	12	12	11	12	12	13
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1728	3493		1888	3328		1787	1900	1561	1787	3514	
Flt Permitted	0.20	1.00		0.12	1.00		0.23	1.00	1.00	0.19	1.00	
Satd. Flow (perm)	371	3493		242	3328		439	1900	1561	348	3514	
Peak-hour factor, PHF	0.94	0.94	0.94	0.96	0.96	0.96	0.94	0.94	0.94	0.88	0.88	0.88
Adj. Flow (vph)	80	726	185	195	590	262	223	384	320	302	536	62
RTOR Reduction (vph)	0	24	0	0	51	0	0	0	199	0	9	0
Lane Group Flow (vph)	80	887	0	195	802	0	223	384	121	302	590	0
Heavy Vehicles (%)	1%	0%	1%	2%	0%	0%	1%	0%	0%	1%	1%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	37.4	31.0		43.4	34.0		31.8	19.8	19.8	35.4	21.6	
Effective Green, g (s)	37.4	32.0		43.4	35.0		31.8	20.8	20.8	35.4	22.6	
Actuated g/C Ratio	0.41	0.35		0.47	0.38		0.35	0.23	0.23	0.38	0.25	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	245	1214		282	1266		327	429	352	349	863	
v/s Ratio Prot	0.02	c0.25		c0.07	0.24		0.09	0.20		c0.13	0.17	
v/s Ratio Perm	0.11			0.26			0.15		0.08	c0.20		
v/c Ratio	0.33	0.73		0.69	0.63		0.68	0.90	0.34	0.87	0.68	
Uniform Delay, d1	17.9	26.2		17.7	23.3		23.1	34.5	29.9	22.9	31.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.8	2.3		7.1	1.0		5.8	20.6	0.6	19.5	2.3	
Delay (s)	18.7	28.5		24.9	24.3		28.9	55.1	30.5	42.4	33.7	
Level of Service	B	C		C	C		C	E	C	D	C	
Approach Delay (s)		27.7			24.4			40.3			36.6	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	31.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	92.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

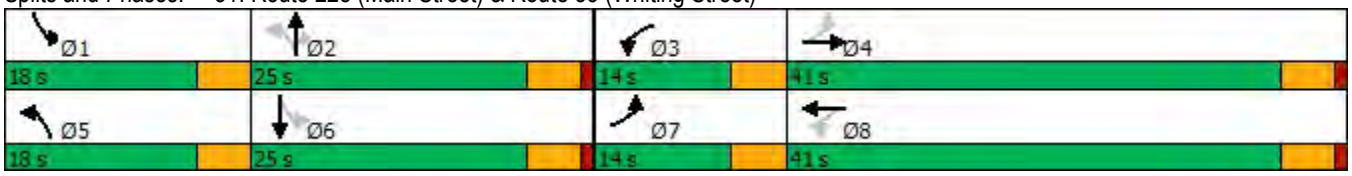


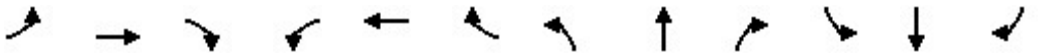
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	621	167	174	689	226	265	364	215	192	338	80
Future Volume (vph)	79	621	167	174	689	226	265	364	215	192	338	80
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.968			0.963				0.850		0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1728	3460	0	1906	3336	0	1787	1881	1546	1752	3443	0
Flt Permitted	0.145			0.163			0.309			0.215		
Satd. Flow (perm)	264	3460	0	327	3336	0	581	1881	1546	397	3443	0
Satd. Flow (RTOR)		40			52				183		27	
Adj. Flow (vph)	82	647	174	185	733	240	282	387	229	202	356	84
Lane Group Flow (vph)	82	821	0	185	973	0	282	387	229	202	440	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	25.0		10.0	23.0		10.0	25.0	25.0	10.0	25.0	
Total Split (s)	14.0	41.0		14.0	41.0		18.0	25.0	25.0	18.0	25.0	
Total Split (%)	14.3%	41.8%		14.3%	41.8%		18.4%	25.5%	25.5%	18.4%	25.5%	
Maximum Green (s)	10.0	36.0		10.0	36.0		14.0	20.0	20.0	14.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	1.0		0.0	1.0		0.0	1.0	1.0	0.0	1.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0		0.0	-1.0	-1.0	0.0	-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		13.0			10.0			13.0	13.0		13.0	
Pedestrian Calls (#/hr)		6			0			5	5		0	
v/c Ratio	0.34	0.69		0.58	0.75		0.70	0.86	0.45	0.63	0.56	
Control Delay	16.0	27.0		20.7	27.3		30.3	54.8	11.7	28.2	32.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	16.0	27.0		20.7	27.3		30.3	54.8	11.7	28.2	32.9	
Queue Length 50th (ft)	24	200		57	243		112	220	21	77	114	
Queue Length 95th (ft)	49	268		97	337		#196	#423	91	139	173	
Internal Link Dist (ft)		1646			278			778			626	
Turn Bay Length (ft)	110			200			170		140	165		
Base Capacity (vph)	289	1505		336	1459		424	457	514	372	858	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.28	0.55		0.55	0.67		0.67	0.85	0.45	0.54	0.51	

Intersection Summary
Cycle Length: 98

Actuated Cycle Length: 87.8
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 31: Route 228 (Main Street) & Route 53 (Whiting Street)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	621	167	174	689	226	265	364	215	192	338	80
Future Volume (vph)	79	621	167	174	689	226	265	364	215	192	338	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	14	11	11	12	12	11	12	12	13
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1728	3461		1906	3336		1787	1881	1546	1752	3444	
Flt Permitted	0.15	1.00		0.16	1.00		0.31	1.00	1.00	0.22	1.00	
Satd. Flow (perm)	264	3461		326	3336		581	1881	1546	397	3444	
Peak-hour factor, PHF	0.96	0.96	0.96	0.94	0.94	0.94	0.94	0.94	0.94	0.95	0.95	0.95
Adj. Flow (vph)	82	647	174	185	733	240	282	387	229	202	356	84
RTOR Reduction (vph)	0	26	0	0	32	0	0	0	140	0	21	0
Lane Group Flow (vph)	82	795	0	185	941	0	282	387	89	202	419	0
Heavy Vehicles (%)	1%	1%	1%	1%	0%	3%	1%	1%	1%	3%	2%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	36.1	29.7		41.7	32.5		33.0	20.0	20.0	30.2	18.6	
Effective Green, g (s)	36.1	30.7		41.7	33.5		33.0	21.0	21.0	30.2	19.6	
Actuated g/C Ratio	0.41	0.35		0.47	0.38		0.37	0.24	0.24	0.34	0.22	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	213	1200		317	1262		393	446	366	313	762	
v/s Ratio Prot	0.03	0.23		c0.06	c0.28		c0.11	c0.21		0.08	0.12	
v/s Ratio Perm	0.13			0.21			0.16		0.06	0.14		
v/c Ratio	0.38	0.66		0.58	0.75		0.72	0.87	0.24	0.65	0.55	
Uniform Delay, d1	17.8	24.5		16.0	23.8		21.1	32.4	27.3	22.8	30.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	1.4		2.7	2.4		6.1	16.2	0.3	4.5	0.8	
Delay (s)	19.0	25.9		18.7	26.2		27.3	48.6	27.7	27.4	31.4	
Level of Service	B	C		B	C		C	D	C	C	C	
Approach Delay (s)		25.3			25.0			36.6			30.1	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	88.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Route 53 at Grove Street and High Street



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	369	633	282	16	530	101	203	82	21	81	70	289
Future Volume (vph)	369	633	282	16	530	101	203	82	21	81	70	289
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.976			0.970				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1881	1599	1805	3523	0	1745	2027	0	1805	1900	1599
Flt Permitted	0.950			0.950			0.497			0.681		
Satd. Flow (perm)	1805	1881	1599	1805	3523	0	913	2027	0	1294	1900	1599
Satd. Flow (RTOR)			278		21			12				321
Adj. Flow (vph)	401	688	307	17	558	106	236	95	24	90	78	321
Lane Group Flow (vph)	401	688	307	17	664	0	236	119	0	90	78	321
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	1	6		5	2		7	4			8	
Permitted Phases			6				4			8		8
Detector Phase	1	6	6	5	2		7	4		8	8	8
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	10.0	27.0	27.0	10.0	27.0		10.0	22.5		10.0	10.0	10.0
Total Split (s)	18.0	35.0	35.0	18.0	35.0		18.0	33.0		15.0	15.0	15.0
Total Split (%)	17.0%	33.0%	33.0%	17.0%	33.0%		17.0%	31.1%		14.2%	14.2%	14.2%
Maximum Green (s)	14.0	30.0	30.0	14.0	30.0		14.0	28.0		10.0	10.0	10.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	1.0	1.0	0.0	1.0		0.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		0.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None		None	None	None
Walk Time (s)		7.0	7.0		7.0							
Flash Dont Walk (s)		15.0	15.0		15.0							
Pedestrian Calls (#/hr)		0	0		0							
v/c Ratio	1.23	0.75	0.33	0.12	0.68		0.51	0.17		0.53	0.31	0.66
Control Delay	157.7	26.3	4.5	41.1	29.4		26.8	19.7		49.0	39.2	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	157.7	26.3	4.5	41.1	29.4		26.8	19.7		49.0	39.2	12.1
Queue Length 50th (ft)	~238	234	6	8	141		79	33		40	34	0
Queue Length 95th (ft)	#588	#735	74	33	262		200	98		#136	99	87
Internal Link Dist (ft)		520			461			519			581	
Turn Bay Length (ft)	350		300	190			80			70		70
Base Capacity (vph)	327	912	918	327	1429		471	769		184	270	503
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	1.23	0.75	0.33	0.05	0.46		0.50	0.15		0.49	0.29	0.64

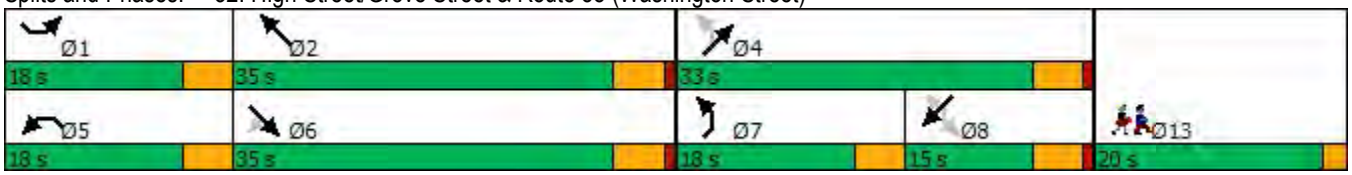
Intersection Summary
Cycle Length: 106

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	20.0
Total Split (s)	20.0
Total Split (%)	19%
Maximum Green (s)	18.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	1
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 79.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
~ 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: 32: HIgh Street/Grove Street & Route 58 (Washington Street)





Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	369	633	282	16	530	101	203	82	21	81	70	289
Future Volume (vph)	369	633	282	16	530	101	203	82	21	81	70	289
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	15	15	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1881	1599	1805	3524		1745	2027		1805	1900	1599
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.50	1.00		0.68	1.00	1.00
Satd. Flow (perm)	1805	1881	1599	1805	3524		913	2027		1293	1900	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.86	0.86	0.86	0.90	0.90	0.90
Adj. Flow (vph)	401	688	307	17	558	106	236	95	24	90	78	321
RTOR Reduction (vph)	0	0	151	0	15	0	0	8	0	0	0	281
Lane Group Flow (vph)	401	688	156	17	649	0	236	111	0	90	78	40
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	1	6		5	2		7	4			8	
Permitted Phases			6				4			8		8
Actuated Green, G (s)	14.4	37.5	37.5	1.2	24.3		26.8	26.8		9.5	9.5	9.5
Effective Green, g (s)	14.4	38.5	38.5	1.2	25.3		26.8	27.8		10.5	10.5	10.5
Actuated g/C Ratio	0.17	0.46	0.46	0.01	0.30		0.32	0.33		0.12	0.12	0.12
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	308	860	731	25	1058		422	669		161	236	199
v/s Ratio Prot	c0.22	c0.37		0.01	0.18		c0.09	0.05			0.04	
v/s Ratio Perm			0.10				c0.09			0.07		0.03
v/c Ratio	1.30	0.80	0.21	0.68	0.61		0.56	0.17		0.56	0.33	0.20
Uniform Delay, d1	34.9	19.6	13.7	41.3	25.3		22.7	20.0		34.7	33.6	33.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	157.6	5.4	0.1	56.0	1.1		1.6	0.1		4.2	0.8	0.5
Delay (s)	192.5	24.9	13.9	97.3	26.3		24.4	20.1		38.8	34.5	33.6
Level of Service	F	C	B	F	C		C	C		D	C	C
Approach Delay (s)		70.6			28.1			22.9			34.7	
Approach LOS		E			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	48.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	84.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	305	655	232	8	553	63	148	34	22	64	29	306
Future Volume (vph)	305	655	232	8	553	63	148	34	22	64	29	306
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.985			0.941				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1583	1805	3556	0	1694	1932	0	1770	1845	1599
Flt Permitted	0.950			0.950			0.507			0.717		
Satd. Flow (perm)	1805	1900	1583	1805	3556	0	904	1932	0	1336	1845	1599
Satd. Flow (RTOR)			221		12			24				329
Adj. Flow (vph)	321	689	244	8	564	64	163	37	24	69	31	329
Lane Group Flow (vph)	321	689	244	8	628	0	163	61	0	69	31	329
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	1	6		5	2		7	4			8	
Permitted Phases			6				4			8		8
Detector Phase	1	6	6	5	2		7	4		8	8	8
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	10.0	27.0	27.0	10.0	27.0		10.0	22.5		10.0	10.0	10.0
Total Split (s)	18.0	35.0	35.0	18.0	35.0		18.0	33.0		15.0	15.0	15.0
Total Split (%)	17.0%	33.0%	33.0%	17.0%	33.0%		17.0%	31.1%		14.2%	14.2%	14.2%
Maximum Green (s)	14.0	30.0	30.0	14.0	30.0		14.0	28.0		10.0	10.0	10.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	1.0	1.0	0.0	1.0		0.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		0.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None		None	None	None
Walk Time (s)		7.0	7.0		7.0							
Flash Dont Walk (s)		15.0	15.0		15.0							
Pedestrian Calls (#/hr)		0	0		0							
v/c Ratio	0.93	0.73	0.27	0.05	0.65		0.38	0.09		0.41	0.13	0.67
Control Delay	69.0	24.6	4.5	40.8	28.6		24.3	15.1		43.2	36.5	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	69.0	24.6	4.5	40.8	28.6		24.3	15.1		43.2	36.5	12.5
Queue Length 50th (ft)	142	217	5	3	127		50	10		28	12	0
Queue Length 95th (ft)	#460	#719	63	21	247		149	51		92	49	88
Internal Link Dist (ft)		520			461			519			581	
Turn Bay Length (ft)	350		300	190			80			70		70
Base Capacity (vph)	346	938	893	346	1517		457	782		201	278	520
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	0.73	0.27	0.02	0.41		0.36	0.08		0.34	0.11	0.63

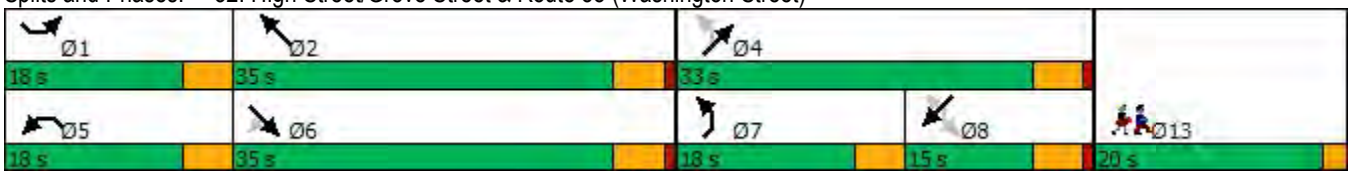
Intersection Summary
Cycle Length: 106

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	20.0
Total Split (s)	20.0
Total Split (%)	19%
Maximum Green (s)	18.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	6
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 76
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 32: HIgh Street/Grove Street & Route 58 (Washington Street)





Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	305	655	232	8	553	63	148	34	22	64	29	306
Future Volume (vph)	305	655	232	8	553	63	148	34	22	64	29	306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	15	15	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1900	1583	1805	3555		1694	1932		1770	1845	1599
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.51	1.00		0.72	1.00	1.00
Satd. Flow (perm)	1805	1900	1583	1805	3555		903	1932		1336	1845	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.98	0.98	0.98	0.91	0.91	0.91	0.93	0.93	0.93
Adj. Flow (vph)	321	689	244	8	564	64	163	37	24	69	31	329
RTOR Reduction (vph)	0	0	118	0	8	0	0	16	0	0	0	289
Lane Group Flow (vph)	321	689	126	8	620	0	163	45	0	69	31	40
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	3%	3%	0%	2%	3%	1%
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	1	6		5	2		7	4			8	
Permitted Phases			6				4			8		8
Actuated Green, G (s)	14.6	36.5	36.5	1.0	22.9		24.7	24.7		8.8	8.8	8.8
Effective Green, g (s)	14.6	37.5	37.5	1.0	23.9		24.7	25.7		9.8	9.8	9.8
Actuated g/C Ratio	0.18	0.46	0.46	0.01	0.30		0.31	0.32		0.12	0.12	0.12
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	326	881	734	22	1051		392	614		162	223	193
v/s Ratio Prot	c0.18	c0.36		0.00	0.17		c0.06	0.02			0.02	
v/s Ratio Perm			0.08				c0.07			0.05		0.02
v/c Ratio	0.98	0.78	0.17	0.36	0.59		0.42	0.07		0.43	0.14	0.21
Uniform Delay, d1	33.0	18.2	12.6	39.6	24.3		21.7	19.2		32.9	31.7	32.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	45.3	4.6	0.1	9.9	0.9		0.7	0.1		1.8	0.3	0.5
Delay (s)	78.3	22.8	12.7	49.5	25.1		22.4	19.3		34.7	32.0	32.5
Level of Service	E	C	B	D	C		C	B		C	C	C
Approach Delay (s)		35.0			25.4			21.5			32.8	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	80.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

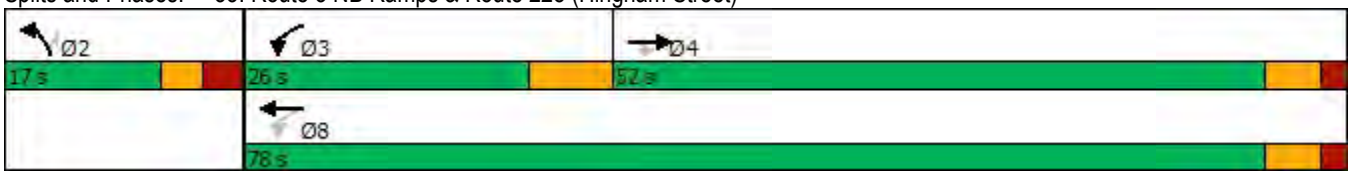
Route 228 at the Route 3 Northbound Ramps



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	750	552	89	589	325	311
Future Volume (vph)	750	552	89	589	325	311
Lane Util. Factor	0.95	1.00	0.95	0.95	0.97	1.00
Frt		0.850				0.850
Flt Protected				0.993	0.950	
Satd. Flow (prot)	3539	1727	0	3496	3479	1743
Flt Permitted				0.773	0.950	
Satd. Flow (perm)	3539	1727	0	2722	3479	1743
Satd. Flow (RTOR)		587				366
Adj. Flow (vph)	798	587	100	662	382	366
Lane Group Flow (vph)	798	587	0	762	382	366
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	12.0	11.0	11.0	11.0
Total Split (s)	52.0	52.0	26.0	78.0	17.0	17.0
Total Split (%)	54.7%	54.7%	27.4%	82.1%	17.9%	17.9%
Maximum Green (s)	46.0	46.0	20.0	72.0	11.0	11.0
Yellow Time (s)	4.0	4.0	6.0	4.0	3.0	3.0
All-Red Time (s)	2.0	2.0	0.0	2.0	3.0	3.0
Lost Time Adjust (s)	-2.0	0.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	6.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.44	0.53		0.55	0.38	0.48
Control Delay	7.2	2.6		8.5	14.2	4.6
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	7.2	2.6		8.5	14.2	4.6
Queue Length 50th (ft)	56	0		57	35	0
Queue Length 95th (ft)	84	34		89	75	42
Internal Link Dist (ft)	386			319	682	
Turn Bay Length (ft)		360			200	
Base Capacity (vph)	3500	1705		2722	1099	800
Starvation Cap Reductn	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0
Reduced v/c Ratio	0.23	0.34		0.28	0.35	0.46

Intersection Summary
Cycle Length: 95
Actuated Cycle Length: 42
Natural Cycle: 45
Control Type: Actuated-Uncoordinated

Splits and Phases: 33: Route 3 NB Ramps & Route 228 (Hingham Street)





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	750	552	89	589	325	311
Future Volume (vph)	750	552	89	589	325	311
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	13	16
Total Lost time (s)	4.0	6.0		4.0	4.0	4.0
Lane Util. Factor	0.95	1.00		0.95	0.97	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		0.99	0.95	1.00
Satd. Flow (prot)	3539	1727		3498	3479	1743
Flt Permitted	1.00	1.00		0.77	0.95	1.00
Satd. Flow (perm)	3539	1727		2721	3479	1743
Peak-hour factor, PHF	0.94	0.94	0.89	0.89	0.85	0.85
Adj. Flow (vph)	798	587	100	662	382	366
RTOR Reduction (vph)	0	313	0	0	0	259
Lane Group Flow (vph)	798	274	0	762	382	107
Heavy Vehicles (%)	2%	6%	6%	2%	4%	5%
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	19.5	19.5		19.5	10.2	10.2
Effective Green, g (s)	21.5	19.5		21.5	12.2	12.2
Actuated g/C Ratio	0.52	0.47		0.52	0.29	0.29
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	1824	807		1402	1017	509
v/s Ratio Prot	0.23				c0.11	
v/s Ratio Perm		0.16		c0.28		0.06
v/c Ratio	0.44	0.34		0.54	0.38	0.21
Uniform Delay, d1	6.3	7.0		6.8	11.7	11.1
Progression Factor	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.3		0.4	0.2	0.2
Delay (s)	6.5	7.3		7.2	12.0	11.3
Level of Service	A	A		A	B	B
Approach Delay (s)	6.8			7.2	11.6	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	41.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

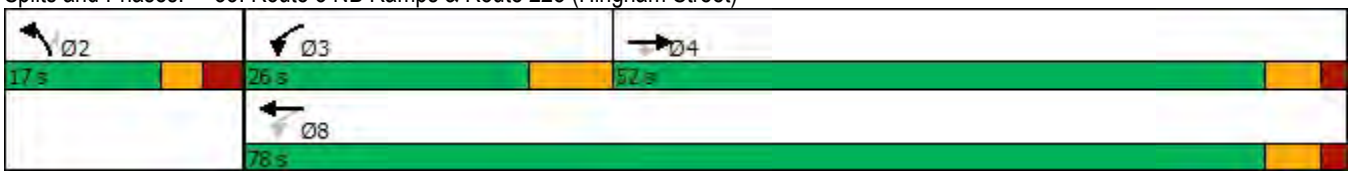
c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	734	674	190	990	264	187
Future Volume (vph)	734	674	190	990	264	187
Lane Util. Factor	0.95	1.00	0.95	0.95	0.97	1.00
Frt		0.850				0.850
Flt Protected				0.992	0.950	
Satd. Flow (prot)	3610	1812	0	3575	3547	1812
Flt Permitted				0.666	0.950	
Satd. Flow (perm)	3610	1812	0	2400	3547	1812
Satd. Flow (RTOR)		741				203
Adj. Flow (vph)	807	741	209	1088	287	203
Lane Group Flow (vph)	807	741	0	1297	287	203
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	12.0	11.0	11.0	11.0
Total Split (s)	52.0	52.0	26.0	78.0	17.0	17.0
Total Split (%)	54.7%	54.7%	27.4%	82.1%	17.9%	17.9%
Maximum Green (s)	46.0	46.0	20.0	72.0	11.0	11.0
Yellow Time (s)	4.0	4.0	6.0	4.0	3.0	3.0
All-Red Time (s)	2.0	2.0	0.0	2.0	3.0	3.0
Lost Time Adjust (s)	-2.0	0.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	6.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.31	0.50		0.76	0.48	0.43
Control Delay	3.9	1.5		9.4	33.6	8.8
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	3.9	1.5		9.4	33.6	8.8
Queue Length 50th (ft)	56	0		155	59	0
Queue Length 95th (ft)	74	23		218	127	61
Internal Link Dist (ft)	386			319	682	
Turn Bay Length (ft)		360			200	
Base Capacity (vph)	2882	1565		2236	671	507
Starvation Cap Reductn	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0
Reduced v/c Ratio	0.28	0.47		0.58	0.43	0.40

Intersection Summary
Cycle Length: 95
Actuated Cycle Length: 72.4
Natural Cycle: 50
Control Type: Actuated-Uncoordinated

Splits and Phases: 33: Route 3 NB Ramps & Route 228 (Hingham Street)





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	734	674	190	990	264	187
Future Volume (vph)	734	674	190	990	264	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	13	16
Total Lost time (s)	4.0	6.0		4.0	4.0	4.0
Lane Util. Factor	0.95	1.00		0.95	0.97	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		0.99	0.95	1.00
Satd. Flow (prot)	3610	1812		3575	3547	1812
Flt Permitted	1.00	1.00		0.67	0.95	1.00
Satd. Flow (perm)	3610	1812		2399	3547	1812
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.92	0.92
Adj. Flow (vph)	807	741	209	1088	287	203
RTOR Reduction (vph)	0	229	0	0	0	169
Lane Group Flow (vph)	807	512	0	1297	287	34
Heavy Vehicles (%)	0%	1%	1%	0%	2%	1%
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	49.6	49.6		49.6	10.2	10.2
Effective Green, g (s)	51.6	49.6		51.6	12.2	12.2
Actuated g/C Ratio	0.72	0.69		0.72	0.17	0.17
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	2594	1251		1724	602	307
v/s Ratio Prot	0.22				c0.08	
v/s Ratio Perm		0.28		c0.54		0.02
v/c Ratio	0.31	0.41		0.75	0.48	0.11
Uniform Delay, d1	3.7	4.8		6.2	26.9	25.2
Progression Factor	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.2		1.9	0.6	0.2
Delay (s)	3.7	5.0		8.1	27.5	25.4
Level of Service	A	A		A	C	C
Approach Delay (s)	4.3			8.1	26.6	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	71.8	Sum of lost time (s)	14.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

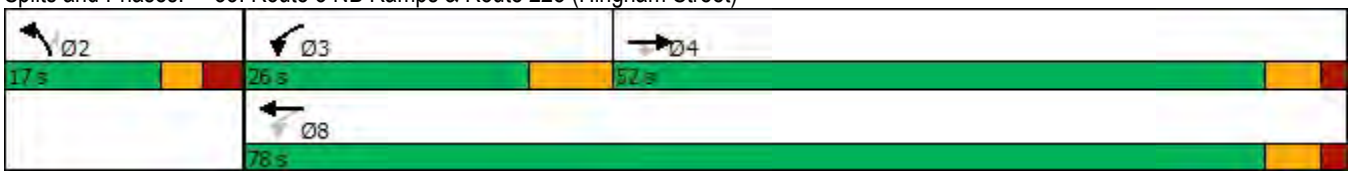
c Critical Lane Group



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	704	415	127	697	192	185
Future Volume (vph)	704	415	127	697	192	185
Lane Util. Factor	0.95	1.00	0.95	0.95	0.97	1.00
Frt		0.850				0.850
Flt Protected				0.992	0.950	
Satd. Flow (prot)	3610	1812	0	3581	3583	1812
Flt Permitted				0.750	0.950	
Satd. Flow (perm)	3610	1812	0	2708	3583	1812
Satd. Flow (RTOR)		428				215
Adj. Flow (vph)	726	428	138	758	223	215
Lane Group Flow (vph)	726	428	0	896	223	215
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0	12.0	11.0	11.0	11.0
Total Split (s)	52.0	52.0	26.0	78.0	17.0	17.0
Total Split (%)	54.7%	54.7%	27.4%	82.1%	17.9%	17.9%
Maximum Green (s)	46.0	46.0	20.0	72.0	11.0	11.0
Yellow Time (s)	4.0	4.0	6.0	4.0	3.0	3.0
All-Red Time (s)	2.0	2.0	0.0	2.0	3.0	3.0
Lost Time Adjust (s)	-2.0	0.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	6.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None
v/c Ratio	0.35	0.37		0.58	0.26	0.36
Control Delay	5.4	1.7		7.6	15.7	5.3
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	5.4	1.7		7.6	15.7	5.3
Queue Length 50th (ft)	39	0		58	22	0
Queue Length 95th (ft)	70	27		107	51	37
Internal Link Dist (ft)	386			319	682	
Turn Bay Length (ft)		360			200	
Base Capacity (vph)	3532	1768		2708	1116	712
Starvation Cap Reductn	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0
Reduced v/c Ratio	0.21	0.24		0.33	0.20	0.30

Intersection Summary
Cycle Length: 95
Actuated Cycle Length: 42.9
Natural Cycle: 40
Control Type: Actuated-Uncoordinated

Splits and Phases: 33: Route 3 NB Ramps & Route 228 (Hingham Street)





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	704	415	127	697	192	185
Future Volume (vph)	704	415	127	697	192	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	13	16
Total Lost time (s)	4.0	6.0		4.0	4.0	4.0
Lane Util. Factor	0.95	1.00		0.95	0.97	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		0.99	0.95	1.00
Satd. Flow (prot)	3610	1812		3582	3583	1812
Flt Permitted	1.00	1.00		0.75	0.95	1.00
Satd. Flow (perm)	3610	1812		2708	3583	1812
Peak-hour factor, PHF	0.97	0.97	0.92	0.92	0.86	0.86
Adj. Flow (vph)	726	428	138	758	223	215
RTOR Reduction (vph)	0	202	0	0	0	164
Lane Group Flow (vph)	726	226	0	896	223	51
Heavy Vehicles (%)	0%	1%	0%	0%	1%	1%
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	22.4	22.4		22.4	8.1	8.1
Effective Green, g (s)	24.4	22.4		24.4	10.1	10.1
Actuated g/C Ratio	0.57	0.53		0.57	0.24	0.24
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	2072	955		1554	851	430
v/s Ratio Prot	0.20				c0.06	
v/s Ratio Perm		0.12		c0.33		0.03
v/c Ratio	0.35	0.24		0.58	0.26	0.12
Uniform Delay, d1	4.8	5.4		5.8	13.2	12.7
Progression Factor	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1		0.5	0.2	0.1
Delay (s)	4.9	5.6		6.3	13.3	12.8
Level of Service	A	A		A	B	B
Approach Delay (s)	5.2			6.3	13.1	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	7.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	42.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Route 228 at Gardner Street (South)

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	46	1297	903	11	5	38
Future Vol, veh/h	46	1297	903	11	5	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	93	93	77	77
Heavy Vehicles, %	0	4	3	18	0	3
Mvmt Flow	48	1365	971	12	6	49

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	983	0	-	0	1756	492
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	779	-
Critical Hdwy	4.1	-	-	-	6.8	6.96
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.33
Pot Cap-1 Maneuver	711	-	-	-	78	520
Stage 1	-	-	-	-	330	-
Stage 2	-	-	-	-	418	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	711	-	-	-	56	520
Mov Cap-2 Maneuver	-	-	-	-	56	-
Stage 1	-	-	-	-	238	-
Stage 2	-	-	-	-	418	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	22.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	711	-	-	-	265
HCM Lane V/C Ratio	0.068	-	-	-	0.211
HCM Control Delay (s)	10.4	1.4	-	-	22.2
HCM Lane LOS	B	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.8

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	66	1408	1228	26	0	92
Future Vol, veh/h	66	1408	1228	26	0	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	96	96	84	84
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	73	1564	1279	27	0	110

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1306	0	-	0	2221	653
Stage 1	-	-	-	-	1293	-
Stage 2	-	-	-	-	928	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	537	-	-	-	38	415
Stage 1	-	-	-	-	225	-
Stage 2	-	-	-	-	350	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	537	-	-	-	0	415
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	350	-

Approach	EB	WB	SB
HCM Control Delay, s	6.1	0	16.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	537	-	-	-	415
HCM Lane V/C Ratio	0.137	-	-	-	0.264
HCM Control Delay (s)	12.8	5.8	-	-	16.8
HCM Lane LOS	B	A	-	-	C
HCM 95th %tile Q(veh)	0.5	-	-	-	1

Intersection	
Int Delay, s/veh	1.6

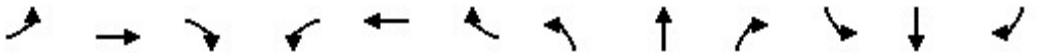
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	44	1113	842	47	6	92
Future Vol, veh/h	44	1113	842	47	6	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	99	99	93	93	82	82
Heavy Vehicles, %	2	1	1	0	0	1
Mvmt Flow	44	1124	905	51	7	112

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	956	0	-	0	1581	478
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	650	-
Critical Hdwy	4.14	-	-	-	6.8	6.92
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.22	-	-	-	3.5	3.31
Pot Cap-1 Maneuver	715	-	-	-	102	536
Stage 1	-	-	-	-	349	-
Stage 2	-	-	-	-	487	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	715	-	-	-	85	536
Mov Cap-2 Maneuver	-	-	-	-	85	-
Stage 1	-	-	-	-	292	-
Stage 2	-	-	-	-	487	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	17.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	715	-	-	-	405
HCM Lane V/C Ratio	0.062	-	-	-	0.295
HCM Control Delay (s)	10.4	0.8	-	-	17.6
HCM Lane LOS	B	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.2

Route 228 at Pond Street

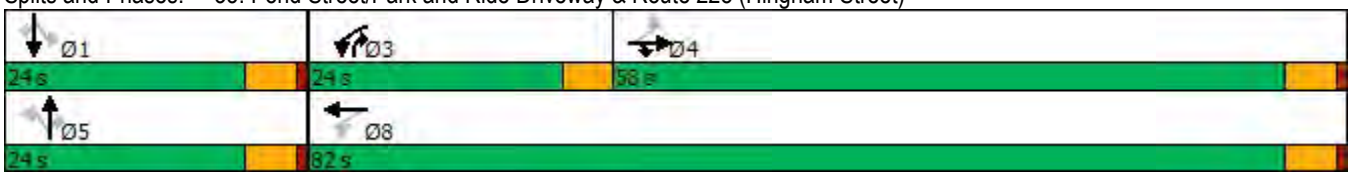


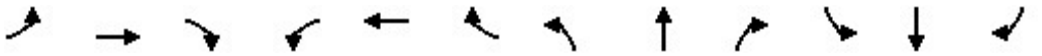
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1110	449	204	728	9	90	0	229	4	0	11
Future Volume (vph)	10	1110	449	204	728	9	90	0	229	4	0	11
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.999				0.850			0.850
Flt Protected					0.989			0.950			0.950	
Satd. Flow (prot)	0	3345	1487	0	3230	0	0	1745	1516	0	1444	1179
Flt Permitted		0.946			0.525			0.754			0.695	
Satd. Flow (perm)	0	3165	1487	0	1714	0	0	1385	1516	0	1056	1179
Satd. Flow (RTOR)			458		2				55			62
Adj. Flow (vph)	10	1133	458	215	766	9	96	0	244	6	0	17
Lane Group Flow (vph)	0	1143	458	0	990	0	0	96	244	0	6	17
Turn Type	Perm	NA	Prot	pm+pt	NA		Perm	NA	pm+ov	Perm	NA	Perm
Protected Phases		4	4	3	8			5	3		1	
Permitted Phases	4			8			5		5	1		1
Detector Phase	4	4	4	3	8		5	5	3	1	1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	10.0	24.0		24.0	24.0	10.0	24.0	24.0	24.0
Total Split (s)	58.0	58.0	58.0	24.0	82.0		24.0	24.0	24.0	24.0	24.0	24.0
Total Split (%)	54.7%	54.7%	54.7%	22.6%	77.4%		22.6%	22.6%	22.6%	22.6%	22.6%	22.6%
Maximum Green (s)	53.0	53.0	53.0	20.0	77.0		19.0	19.0	20.0	19.0	19.0	19.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	0.0	1.0		1.0	1.0	0.0	1.0	1.0	1.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0	0.0		-1.0	-1.0
Total Lost Time (s)		4.0	4.0		4.0			4.0	4.0		4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead					Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		Min	Min	None	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0		7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0		0	0		0	0	0
v/c Ratio		0.65	0.45		0.73			0.41	0.46		0.03	0.07
Control Delay		12.7	2.3		8.5			37.1	21.3		32.5	0.5
Queue Delay		0.0	0.0		0.0			0.0	0.0		0.0	0.0
Total Delay		12.7	2.3		8.5			37.1	21.3		32.5	0.5
Queue Length 50th (ft)		154	0		70			35	57		2	0
Queue Length 95th (ft)		276	36		138			109	182		11	0
Internal Link Dist (ft)		650			658			240			120	
Turn Bay Length (ft)			240						290			90
Base Capacity (vph)		2556	1289		1741			418	834		319	399
Starvation Cap Reductn		0	0		0			0	0		0	0
Spillback Cap Reductn		0	0		0			0	0		0	0
Storage Cap Reductn		0	0		0			0	0		0	0
Reduced v/c Ratio		0.45	0.36		0.57			0.23	0.29		0.02	0.04

Intersection Summary
Cycle Length: 106

Actuated Cycle Length: 71.8
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 35: Pond Street/Park and Ride Driveway & Route 228 (Hingham Street)

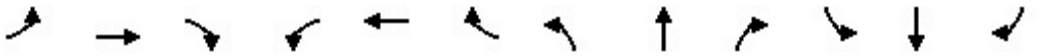




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1110	449	204	728	9	90	0	229	4	0	11
Future Volume (vph)	10	1110	449	204	728	9	90	0	229	4	0	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	10	10	11	11	11	11	12	12	12
Total Lost time (s)		4.0	4.0		4.0			4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	1.00		0.95			1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00			1.00	0.85		1.00	0.85
Flt Protected		1.00	1.00		0.99			0.95	1.00		0.95	1.00
Satd. Flow (prot)		3344	1487		3229			1745	1516		1444	1179
Flt Permitted		0.95	1.00		0.53			0.75	1.00		0.69	1.00
Satd. Flow (perm)		3163	1487		1715			1384	1516		1056	1179
Peak-hour factor, PHF	0.98	0.98	0.98	0.95	0.95	0.95	0.94	0.94	0.94	0.63	0.63	0.63
Adj. Flow (vph)	10	1133	458	215	766	9	96	0	244	6	0	17
RTOR Reduction (vph)	0	0	200	0	1	0	0	0	41	0	0	14
Lane Group Flow (vph)	0	1143	258	0	989	0	0	96	203	0	6	3
Heavy Vehicles (%)	40%	4%	5%	3%	3%	11%	0%	0%	3%	25%	0%	37%
Turn Type	Perm	NA	Prot	pm+pt	NA		Perm	NA	pm+ov	Perm	NA	Perm
Protected Phases		4	4	3	8			5	3		1	
Permitted Phases	4			8			5		5	1		1
Actuated Green, G (s)		39.0	39.0		49.8			11.1	17.9		11.1	11.1
Effective Green, g (s)		40.0	40.0		50.8			12.1	17.9		12.1	12.1
Actuated g/C Ratio		0.56	0.56		0.72			0.17	0.25		0.17	0.17
Clearance Time (s)		5.0	5.0		5.0			5.0	4.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1784	838		1395			236	382		180	201
v/s Ratio Prot			0.17		c0.08				c0.05			
v/s Ratio Perm		0.36			c0.43			0.07	0.08		0.01	0.00
v/c Ratio		0.64	0.31		0.71			0.41	0.53		0.03	0.01
Uniform Delay, d1		10.5	8.2		5.8			26.2	22.9		24.5	24.4
Progression Factor		1.00	1.00		1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.8	0.2		1.7			1.1	1.4		0.1	0.0
Delay (s)		11.3	8.4		7.5			27.3	24.3		24.6	24.5
Level of Service		B	A		A			C	C		C	C
Approach Delay (s)		10.5			7.5			25.2			24.5	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	70.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

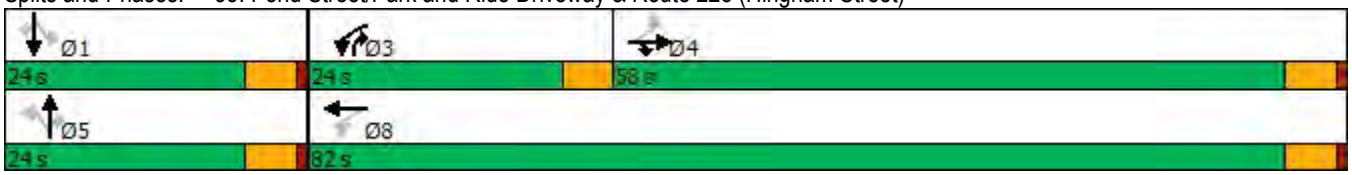


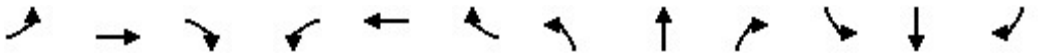
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	897	463	205	1094	21	211	4	554	23	5	20
Future Volume (vph)	9	897	463	205	1094	21	211	4	554	23	5	20
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.998				0.850			0.850
Flt Protected		0.999			0.992			0.953			0.961	
Satd. Flow (prot)	0	3448	1531	0	3296	0	0	1733	1561	0	1627	1538
Flt Permitted		0.935			0.550			0.702			0.536	
Satd. Flow (perm)	0	3227	1531	0	1827	0	0	1277	1561	0	907	1538
Satd. Flow (RTOR)			503		4				86			62
Adj. Flow (vph)	10	975	503	214	1140	22	257	5	676	31	7	27
Lane Group Flow (vph)	0	985	503	0	1376	0	0	262	676	0	38	27
Turn Type	Perm	NA	Prot	pm+pt	NA		Perm	NA	pm+ov	Perm	NA	Perm
Protected Phases		4	4	3	8			5	3		1	
Permitted Phases	4			8			5		5	1		1
Detector Phase	4	4	4	3	8		5	5	3	1	1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	10.0	24.0		24.0	24.0	10.0	24.0	24.0	24.0
Total Split (s)	58.0	58.0	58.0	24.0	82.0		24.0	24.0	24.0	24.0	24.0	24.0
Total Split (%)	54.7%	54.7%	54.7%	22.6%	77.4%		22.6%	22.6%	22.6%	22.6%	22.6%	22.6%
Maximum Green (s)	53.0	53.0	53.0	20.0	77.0		19.0	19.0	20.0	19.0	19.0	19.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	0.0	1.0		1.0	1.0	0.0	1.0	1.0	1.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0	0.0		-1.0	-1.0
Total Lost Time (s)		4.0	4.0		4.0			4.0	4.0		4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead					Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		Min	Min	None	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0		7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0		0	0		0	0	0
v/c Ratio		0.62	0.50		0.86			1.04	0.94		0.21	0.08
Control Delay		20.7	3.2		13.5			110.8	48.8		40.1	1.4
Queue Delay		0.0	0.0		0.0			0.0	0.0		0.0	0.0
Total Delay		20.7	3.2		13.5			110.8	48.8		40.1	1.4
Queue Length 50th (ft)		238	0		190			~201	399		22	0
Queue Length 95th (ft)		303	50		237			#314	#546		44	0
Internal Link Dist (ft)		650			658			240			120	
Turn Bay Length (ft)			240						290			90
Base Capacity (vph)		1720	1051		1689			251	727		179	353
Starvation Cap Reductn		0	0		0			0	0		0	0
Spillback Cap Reductn		0	0		0			0	0		0	0
Storage Cap Reductn		0	0		0			0	0		0	0
Reduced v/c Ratio		0.57	0.48		0.81			1.04	0.93		0.21	0.08

Intersection Summary
Cycle Length: 106

Actuated Cycle Length: 102
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
~ 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: 35: Pond Street/Park and Ride Driveway & Route 228 (Hingham Street)

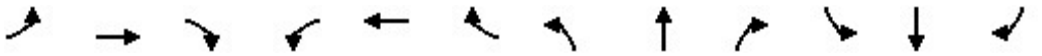




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	897	463	205	1094	21	211	4	554	23	5	20
Future Volume (vph)	9	897	463	205	1094	21	211	4	554	23	5	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	10	10	11	11	11	11	12	12	12
Total Lost time (s)		4.0	4.0		4.0			4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	1.00		0.95			1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00			1.00	0.85		1.00	0.85
Flt Protected		1.00	1.00		0.99			0.95	1.00		0.96	1.00
Satd. Flow (prot)		3450	1531		3296			1734	1561		1627	1538
Flt Permitted		0.94	1.00		0.55			0.70	1.00		0.54	1.00
Satd. Flow (perm)		3229	1531		1828			1277	1561		907	1538
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.96	0.82	0.82	0.82	0.75	0.75	0.75
Adj. Flow (vph)	10	975	503	214	1140	22	257	5	676	31	7	27
RTOR Reduction (vph)	0	0	255	0	1	0	0	0	53	0	0	22
Lane Group Flow (vph)	0	985	248	0	1375	0	0	262	623	0	38	5
Heavy Vehicles (%)	11%	1%	2%	1%	1%	14%	1%	0%	0%	15%	0%	5%
Turn Type	Perm	NA	Prot	pm+pt	NA		Perm	NA	pm+ov	Perm	NA	Perm
Protected Phases		4	4	3	8			5	3		1	
Permitted Phases	4			8			5		5	1		1
Actuated Green, G (s)		49.3	49.3		72.8			19.1	38.6		19.1	19.1
Effective Green, g (s)		50.3	50.3		73.8			20.1	38.6		20.1	20.1
Actuated g/C Ratio		0.49	0.49		0.72			0.20	0.38		0.20	0.20
Clearance Time (s)		5.0	5.0		5.0			5.0	4.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1593	755		1619			251	591		178	303
v/s Ratio Prot			0.16		0.17				c0.20			
v/s Ratio Perm		0.31			c0.44			c0.21	0.20		0.04	0.00
v/c Ratio		0.62	0.33		0.85			1.04	1.05		0.21	0.02
Uniform Delay, d1		18.8	15.6		10.1			40.9	31.7		34.3	32.9
Progression Factor		1.00	1.00		1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.7	0.3		4.4			68.7	51.9		0.6	0.0
Delay (s)		19.5	15.9		14.4			109.6	83.5		34.9	33.0
Level of Service		B	B		B			F	F		C	C
Approach Delay (s)		18.3			14.4			90.8			34.1	
Approach LOS		B			B			F			C	

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	101.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



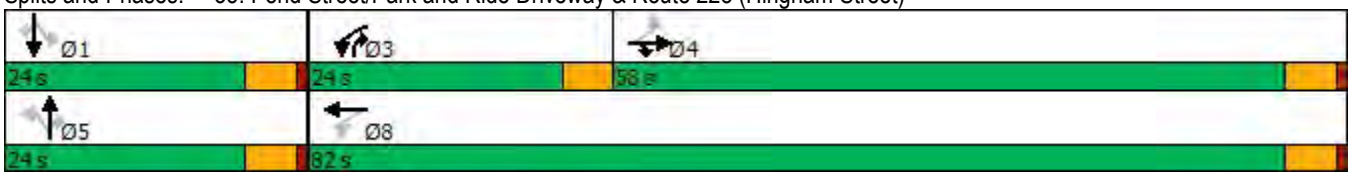
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	836	237	146	781	7	122	4	316	5	0	12
Future Volume (vph)	10	836	237	146	781	7	122	4	316	5	0	12
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.999				0.850			0.850
Flt Protected		0.999			0.992			0.954			0.950	
Satd. Flow (prot)	0	3448	1561	0	3308	0	0	1752	1561	0	1504	1495
Flt Permitted		0.940			0.627			0.729			0.638	
Satd. Flow (perm)	0	3244	1561	0	2091	0	0	1339	1561	0	1010	1495
Satd. Flow (RTOR)			255		2				105			62
Adj. Flow (vph)	11	899	255	162	868	8	139	5	359	7	0	17
Lane Group Flow (vph)	0	910	255	0	1038	0	0	144	359	0	7	17
Turn Type	Perm	NA	Prot	pm+pt	NA		Perm	NA	pm+ov	Perm	NA	Perm
Protected Phases		4	4	3	8			5	3		1	
Permitted Phases	4			8			5		5	1		1
Detector Phase	4	4	4	3	8		5	5	3	1	1	1
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	10.0	24.0		24.0	24.0	10.0	24.0	24.0	24.0
Total Split (s)	58.0	58.0	58.0	24.0	82.0		24.0	24.0	24.0	24.0	24.0	24.0
Total Split (%)	54.7%	54.7%	54.7%	22.6%	77.4%		22.6%	22.6%	22.6%	22.6%	22.6%	22.6%
Maximum Green (s)	53.0	53.0	53.0	20.0	77.0		19.0	19.0	20.0	19.0	19.0	19.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	0.0	1.0		1.0	1.0	0.0	1.0	1.0	1.0
Lost Time Adjust (s)		-1.0	-1.0		-1.0			-1.0	0.0		-1.0	-1.0
Total Lost Time (s)		4.0	4.0		4.0			4.0	4.0		4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead					Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		Min	Min	None	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0		7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0		0	0		0	0	0
v/c Ratio		0.57	0.29		0.68			0.52	0.54		0.03	0.05
Control Delay		13.4	2.3		8.2			35.9	17.2		28.4	0.2
Queue Delay		0.0	0.0		0.0			0.0	0.0		0.0	0.0
Total Delay		13.4	2.3		8.2			35.9	17.2		28.4	0.2
Queue Length 50th (ft)		118	0		84			49	71		2	0
Queue Length 95th (ft)		225	34		155			141	209		12	0
Internal Link Dist (ft)		650			658			240			120	
Turn Bay Length (ft)			240						290			90
Base Capacity (vph)		2659	1325		2133			435	971		328	527
Starvation Cap Reductn		0	0		0			0	0		0	0
Spillback Cap Reductn		0	0		0			0	0		0	0
Storage Cap Reductn		0	0		0			0	0		0	0
Reduced v/c Ratio		0.34	0.19		0.49			0.33	0.37		0.02	0.03

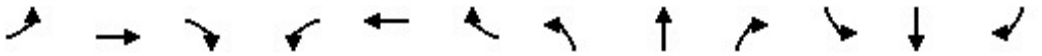
Intersection Summary

Cycle Length: 106

Actuated Cycle Length: 67.1
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 35: Pond Street/Park and Ride Driveway & Route 228 (Hingham Street)



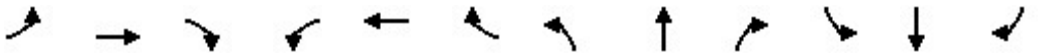


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	836	237	146	781	7	122	4	316	5	0	12
Future Volume (vph)	10	836	237	146	781	7	122	4	316	5	0	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	10	10	11	11	11	11	12	12	12
Total Lost time (s)		4.0	4.0		4.0			4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	1.00		0.95			1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00			1.00	0.85		1.00	0.85
Flt Protected		1.00	1.00		0.99			0.95	1.00		0.95	1.00
Satd. Flow (prot)		3449	1561		3308			1752	1561		1504	1495
Flt Permitted		0.94	1.00		0.63			0.73	1.00		0.64	1.00
Satd. Flow (perm)		3245	1561		2092			1339	1561		1010	1495
Peak-hour factor, PHF	0.93	0.93	0.93	0.90	0.90	0.90	0.88	0.88	0.88	0.71	0.71	0.71
Adj. Flow (vph)	11	899	255	162	868	8	139	5	359	7	0	17
RTOR Reduction (vph)	0	0	128	0	1	0	0	0	73	0	0	13
Lane Group Flow (vph)	0	910	128	0	1037	0	0	144	286	0	7	4
Heavy Vehicles (%)	10%	1%	0%	0%	1%	14%	0%	0%	0%	20%	0%	8%
Turn Type	Perm	NA	Prot	pm+pt	NA		Perm	NA	pm+ov	Perm	NA	Perm
Protected Phases		4	4	3	8			5	3		1	
Permitted Phases	4			8			5		5	1		1
Actuated Green, G (s)		32.1	32.1		43.5			12.7	20.1		12.7	12.7
Effective Green, g (s)		33.1	33.1		44.5			13.7	20.1		13.7	13.7
Actuated g/C Ratio		0.50	0.50		0.67			0.21	0.30		0.21	0.21
Clearance Time (s)		5.0	5.0		5.0			5.0	4.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1622	780		1560			277	473		209	309
v/s Ratio Prot			0.08		c0.08				c0.07			
v/s Ratio Perm		0.28			c0.36			0.11	0.12		0.01	0.00
v/c Ratio		0.56	0.16		0.66			0.52	0.60		0.03	0.01
Uniform Delay, d1		11.5	9.0		6.4			23.3	19.7		21.0	20.9
Progression Factor		1.00	1.00		1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.4	0.1		1.1			1.6	2.2		0.1	0.0
Delay (s)		11.9	9.1		7.5			25.0	21.8		21.0	20.9
Level of Service		B	A		A			C	C		C	C
Approach Delay (s)		11.3			7.5			22.7			20.9	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	66.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Route 228 at the Route 3 Southbound Ramps

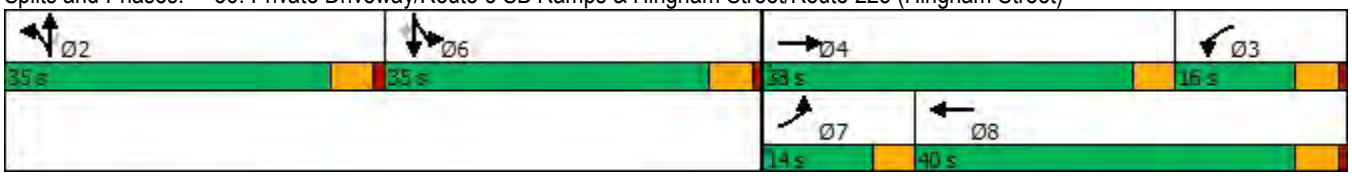


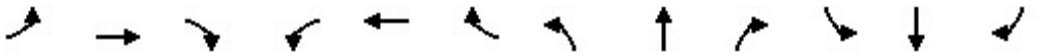
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	973	67	81	566	182	34	30	109	487	48	366
Future Volume (vph)	150	973	67	81	566	182	34	30	109	487	48	366
Lane Util. Factor	0.97	0.95	0.95	0.97	0.95	0.95	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.990			0.964				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950	0.961	
Satd. Flow (prot)	3367	3414	0	3502	3379	0	1745	1776	1599	1579	1661	1679
Flt Permitted	0.950			0.950			0.950			0.950	0.961	
Satd. Flow (perm)	3367	3414	0	3502	3379	0	1745	1776	1599	1579	1661	1679
Satd. Flow (RTOR)		6			35				132			394
Adj. Flow (vph)	155	1003	69	89	622	200	40	35	127	524	52	394
Lane Group Flow (vph)	155	1072	0	89	822	0	40	35	127	288	288	394
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases									2			6
Detector Phase	7	4		3	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	22.5		10.0	10.0		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	14.0	38.0		16.0	40.0		35.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	11.3%	30.6%		12.9%	32.3%		28.2%	28.2%	28.2%	28.2%	28.2%	28.2%
Maximum Green (s)	10.0	34.0		11.0	35.0		30.0	30.0	30.0	30.0	30.0	30.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	0.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min		None	Min		Min	Min	Min	Min	Min	Min
v/c Ratio	0.46	0.82		0.25	0.68		0.24	0.21	0.47	0.66	0.63	0.53
Control Delay	46.4	34.9		42.8	28.5		45.6	44.8	13.5	38.6	36.9	5.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.4	34.9		42.8	28.5		45.6	44.8	13.5	38.6	36.9	5.8
Queue Length 50th (ft)	45	312		26	212		23	20	0	158	156	0
Queue Length 95th (ft)	85	#508		52	306		55	50	45	270	266	68
Internal Link Dist (ft)		277			650			646			514	
Turn Bay Length (ft)	220			300			70		70	400		400
Base Capacity (vph)	376	1301		469	1381		604	615	640	547	575	839
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	0.41	0.82		0.19	0.60		0.07	0.06	0.20	0.53	0.50	0.47

Intersection Summary
Cycle Length: 124
Actuated Cycle Length: 91.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 36: Private Driveway/Route 3 SB Ramps & Hingham Street/Route 228 (Hingham Street)

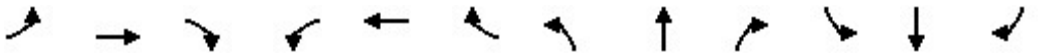




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	973	67	81	566	182	34	30	109	487	48	366
Future Volume (vph)	150	973	67	81	566	182	34	30	109	487	48	366
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	16	11	12	12	11	12	16
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.99		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	0.96	1.00
Satd. Flow (prot)	3367	3415		3502	3377		1745	1776	1599	1579	1660	1679
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	0.96	1.00
Satd. Flow (perm)	3367	3415		3502	3377		1745	1776	1599	1579	1660	1679
Peak-hour factor, PHF	0.97	0.97	0.97	0.91	0.91	0.91	0.86	0.86	0.86	0.93	0.93	0.93
Adj. Flow (vph)	155	1003	69	89	622	200	40	35	127	524	52	394
RTOR Reduction (vph)	0	4	0	0	22	0	0	0	115	0	0	287
Lane Group Flow (vph)	155	1068	0	89	800	0	40	35	12	288	288	107
Heavy Vehicles (%)	4%	5%	0%	0%	3%	3%	0%	7%	1%	5%	2%	9%
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases									2			6
Actuated Green, G (s)	9.2	34.8		6.8	32.4		7.8	7.8	7.8	24.1	24.1	24.1
Effective Green, g (s)	9.2	34.8		7.8	33.4		8.8	8.8	8.8	25.1	25.1	25.1
Actuated g/C Ratio	0.10	0.38		0.08	0.36		0.10	0.10	0.10	0.27	0.27	0.27
Clearance Time (s)	4.0	4.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	334	1284		295	1219		166	168	152	428	450	455
v/s Ratio Prot	0.05	c0.31		0.03	c0.24		c0.02	0.02		c0.18	0.17	
v/s Ratio Perm									0.01			0.06
v/c Ratio	0.46	0.83		0.30	0.66		0.24	0.21	0.08	0.67	0.64	0.23
Uniform Delay, d1	39.3	26.2		39.8	24.7		38.8	38.6	38.2	30.0	29.7	26.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	4.8		0.6	1.3		0.8	0.6	0.2	4.1	3.1	0.3
Delay (s)	40.3	30.9		40.4	26.0		39.5	39.3	38.4	34.2	32.8	26.5
Level of Service	D	C		D	C		D	D	D	C	C	C
Approach Delay (s)		32.1			27.4			38.8			30.7	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	92.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

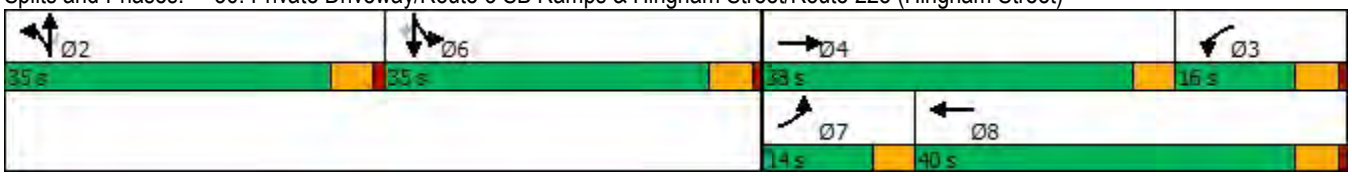


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	266	704	75	111	844	370	85	33	133	532	53	396
Future Volume (vph)	266	704	75	111	844	370	85	33	133	532	53	396
Lane Util. Factor	0.97	0.95	0.95	0.97	0.95	0.95	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.986			0.954				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950	0.961	
Satd. Flow (prot)	3502	3528	0	3502	3420	0	1745	1900	1615	1625	1701	1794
Flt Permitted	0.950			0.950			0.950			0.950	0.961	
Satd. Flow (perm)	3502	3528	0	3502	3420	0	1745	1900	1615	1625	1701	1794
Satd. Flow (RTOR)		9			56				160			434
Adj. Flow (vph)	302	800	85	118	898	394	102	40	160	585	58	435
Lane Group Flow (vph)	302	885	0	118	1292	0	102	40	160	322	321	435
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases									2			6
Detector Phase	7	4		3	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	22.5		10.0	10.0		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	14.0	38.0		16.0	40.0		35.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	11.3%	30.6%		12.9%	32.3%		28.2%	28.2%	28.2%	28.2%	28.2%	28.2%
Maximum Green (s)	10.0	34.0		11.0	35.0		30.0	30.0	30.0	30.0	30.0	30.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	0.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min		None	Min		Min	Min	Min	Min	Min	Min
v/c Ratio	0.88	0.82		0.23	1.04		0.48	0.17	0.47	0.74	0.70	0.54
Control Delay	73.7	40.0		43.8	69.0		50.4	42.8	11.6	45.5	43.2	5.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.7	40.0		43.8	69.0		50.4	42.8	11.6	45.5	43.2	5.8
Queue Length 50th (ft)	105	279		38	~498		65	25	0	201	197	1
Queue Length 95th (ft)	#192	371		70	#687		109	52	45	327	321	74
Internal Link Dist (ft)		277			650			646			514	
Turn Bay Length (ft)	220			300			70		70	400		400
Base Capacity (vph)	343	1182		509	1243		530	577	602	493	517	847
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	0.75		0.23	1.04		0.19	0.07	0.27	0.65	0.62	0.51

Intersection Summary
Cycle Length: 124
Actuated Cycle Length: 102.5
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

~ 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: 36: Private Driveway/Route 3 SB Ramps & Hingham Street/Route 228 (Hingham Street)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	266	704	75	111	844	370	85	33	133	532	53	396
Future Volume (vph)	266	704	75	111	844	370	85	33	133	532	53	396
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	16	11	12	12	11	12	16
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.99		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	0.96	1.00
Satd. Flow (prot)	3502	3526		3502	3421		1745	1900	1615	1625	1700	1794
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	0.96	1.00
Satd. Flow (perm)	3502	3526		3502	3421		1745	1900	1615	1625	1700	1794
Peak-hour factor, PHF	0.88	0.88	0.88	0.94	0.94	0.94	0.83	0.83	0.83	0.91	0.91	0.91
Adj. Flow (vph)	302	800	85	118	898	394	102	40	160	585	58	435
RTOR Reduction (vph)	0	6	0	0	36	0	0	0	140	0	0	317
Lane Group Flow (vph)	302	879	0	118	1256	0	102	40	20	322	321	118
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases									2			6
Actuated Green, G (s)	10.1	31.4		13.9	35.2		11.5	11.5	11.5	26.7	26.7	26.7
Effective Green, g (s)	10.1	31.4		14.9	36.2		12.5	12.5	12.5	27.7	27.7	27.7
Actuated g/C Ratio	0.10	0.31		0.15	0.35		0.12	0.12	0.12	0.27	0.27	0.27
Clearance Time (s)	4.0	4.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	345	1080		509	1208		212	231	196	439	459	484
v/s Ratio Prot	0.09	c0.25		0.03	c0.37		c0.06	0.02		c0.20	0.19	
v/s Ratio Perm									0.01			0.07
v/c Ratio	0.88	0.81		0.23	1.04		0.48	0.17	0.10	0.73	0.70	0.24
Uniform Delay, d1	45.6	32.8		38.7	33.1		42.0	40.4	40.0	34.0	33.7	29.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.1	4.8		0.2	36.8		1.7	0.4	0.2	6.2	4.6	0.3
Delay (s)	66.7	37.6		39.0	69.9		43.7	40.7	40.2	40.3	38.3	29.5
Level of Service	E	D		D	E		D	D	D	D	D	C
Approach Delay (s)		45.0			67.3			41.5			35.3	
Approach LOS		D			E			D			D	

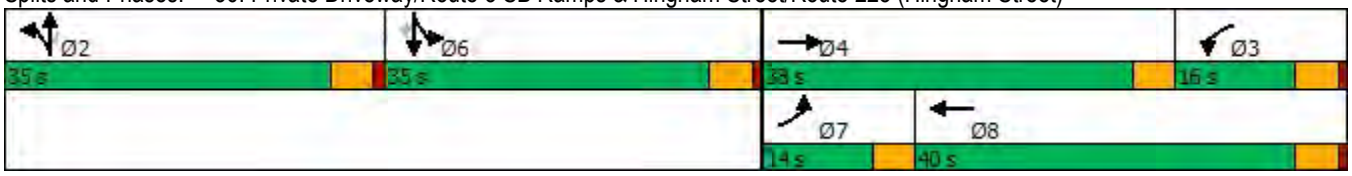
Intersection Summary			
HCM 2000 Control Delay	50.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	102.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		

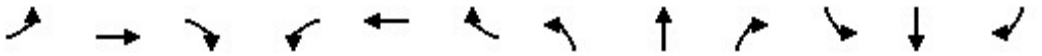
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	646	123	155	558	202	91	35	197	240	58	121
Future Volume (vph)	148	646	123	155	558	202	91	35	197	240	58	121
Lane Util. Factor	0.97	0.95	0.95	0.97	0.95	0.95	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.976			0.960				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950	0.970	
Satd. Flow (prot)	3467	3494	0	3502	3431	0	1745	1900	1615	1641	1727	1794
Flt Permitted	0.950			0.950			0.950			0.950	0.970	
Satd. Flow (perm)	3467	3494	0	3502	3431	0	1745	1900	1615	1641	1727	1794
Satd. Flow (RTOR)		17			42				235			139
Adj. Flow (vph)	159	695	132	168	607	220	108	42	235	276	67	139
Lane Group Flow (vph)	159	827	0	168	827	0	108	42	235	171	172	139
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases									2			6
Detector Phase	7	4		3	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	22.5		10.0	10.0		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	14.0	38.0		16.0	40.0		35.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	11.3%	30.6%		12.9%	32.3%		28.2%	28.2%	28.2%	28.2%	28.2%	28.2%
Maximum Green (s)	10.0	34.0		11.0	35.0		30.0	30.0	30.0	30.0	30.0	30.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	0.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min		None	Min		Min	Min	Min	Min	Min	Min
v/c Ratio	0.42	0.72		0.38	0.69		0.41	0.15	0.53	0.53	0.51	0.30
Control Delay	41.9	29.2		39.4	26.4		40.4	35.7	10.0	38.6	37.5	7.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.9	29.2		39.4	26.4		40.4	35.7	10.0	38.6	37.5	7.8
Queue Length 50th (ft)	40	191		42	181		52	19	0	84	84	0
Queue Length 95th (ft)	86	321		88	305		108	51	51	166	166	44
Internal Link Dist (ft)		277			650			646			514	
Turn Bay Length (ft)	220			300			70		70	400		400
Base Capacity (vph)	437	1507		530	1580		682	742	774	641	674	786
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	0.36	0.55		0.32	0.52		0.16	0.06	0.30	0.27	0.26	0.18

Intersection Summary
Cycle Length: 124
Actuated Cycle Length: 82.7
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 36: Private Driveway/Route 3 SB Ramps & Hingham Street/Route 228 (Hingham Street)



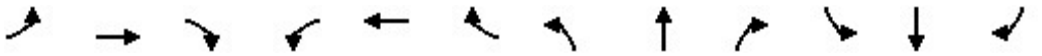


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	646	123	155	558	202	91	35	197	240	58	121
Future Volume (vph)	148	646	123	155	558	202	91	35	197	240	58	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	16	11	12	12	11	12	16
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.98		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	0.97	1.00
Satd. Flow (prot)	3467	3494		3502	3432		1745	1900	1615	1641	1728	1794
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	0.97	1.00
Satd. Flow (perm)	3467	3494		3502	3432		1745	1900	1615	1641	1728	1794
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.84	0.84	0.84	0.87	0.87	0.87
Adj. Flow (vph)	159	695	132	168	607	220	108	42	235	276	67	139
RTOR Reduction (vph)	0	11	0	0	28	0	0	0	200	0	0	111
Lane Group Flow (vph)	159	816	0	168	799	0	108	42	35	171	172	28
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%	0%	0%	0%	1%	2%	2%
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases									2			6
Actuated Green, G (s)	9.1	26.8		9.5	27.2		11.3	11.3	11.3	15.2	15.2	15.2
Effective Green, g (s)	9.1	26.8		10.5	28.2		12.3	12.3	12.3	16.2	16.2	16.2
Actuated g/C Ratio	0.11	0.33		0.13	0.34		0.15	0.15	0.15	0.20	0.20	0.20
Clearance Time (s)	4.0	4.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	385	1144		449	1183		262	285	242	324	342	355
v/s Ratio Prot	0.05	c0.23		0.05	c0.23		c0.06	0.02		c0.10	0.10	
v/s Ratio Perm									0.02			0.02
v/c Ratio	0.41	0.71		0.37	0.68		0.41	0.15	0.15	0.53	0.50	0.08
Uniform Delay, d1	33.9	24.1		32.6	22.9		31.5	30.2	30.2	29.4	29.2	26.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	2.1		0.5	1.5		1.1	0.2	0.3	1.6	1.2	0.1
Delay (s)	34.6	26.3		33.2	24.4		32.5	30.4	30.5	30.9	30.4	26.8
Level of Service	C	C		C	C		C	C	C	C	C	C
Approach Delay (s)		27.6			25.9			31.0			29.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	81.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

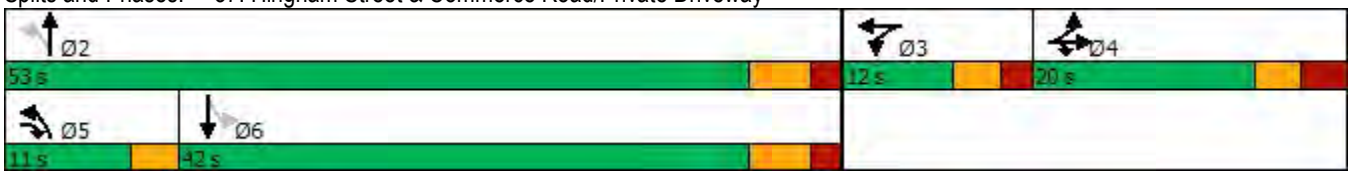
Hingham Street at Commerce Road

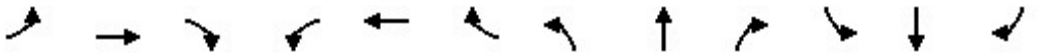


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	0	19	0	0	0	50	1201	6	6	792	60
Future Volume (vph)	34	0	19	0	0	0	50	1201	6	6	792	60
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850					0.999			0.989	
Flt Protected	0.950	0.950						0.998				
Satd. Flow (prot)	1672	1726	1589	0	1900	0	0	3377	0	0	3406	0
Flt Permitted	0.950	0.950						0.898			0.945	
Satd. Flow (perm)	1672	1726	1589	0	1900	0	0	3039	0	0	3219	0
Satd. Flow (RTOR)			103					1			12	
Adj. Flow (vph)	46	0	26	0	0	0	52	1251	6	6	816	62
Lane Group Flow (vph)	23	23	26	0	0	0	0	1309	0	0	884	0
Turn Type	Split	NA	pt+ov				pm+pt	NA		Perm	NA	
Protected Phases	4	4	4 5	3	3		5	2			6	
Permitted Phases							2			6		
Detector Phase	4	4	4 5	3	3		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		10.0	10.0		10.0	24.0		24.0	24.0	
Total Split (s)	20.0	20.0		12.0	12.0		11.0	53.0		42.0	42.0	
Total Split (%)	23.5%	23.5%		14.1%	14.1%		12.9%	62.4%		49.4%	49.4%	
Maximum Green (s)	14.0	14.0		7.0	7.0		8.0	47.0		36.0	36.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		2.0	2.0		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0			-1.0			-2.0			-2.0	
Total Lost Time (s)	4.0	4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead	Lead		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
v/c Ratio	0.06	0.06	0.05					0.52			0.36	
Control Delay	22.5	22.5	0.2					4.1			5.3	
Queue Delay	0.0	0.0	0.0					0.0			0.0	
Total Delay	22.5	22.5	0.2					4.1			5.3	
Queue Length 50th (ft)	6	6	0					86			45	
Queue Length 95th (ft)	23	23	0					128			126	
Internal Link Dist (ft)		730			551			1680			158	
Turn Bay Length (ft)	145		125									
Base Capacity (vph)	753	777	751					2815			2619	
Starvation Cap Reductn	0	0	0					0			0	
Spillback Cap Reductn	0	0	0					0			0	
Storage Cap Reductn	0	0	0					0			0	
Reduced v/c Ratio	0.03	0.03	0.03					0.47			0.34	

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 43.5
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

Splits and Phases: 37: Hingham Street & Commerce Road/Private Driveway

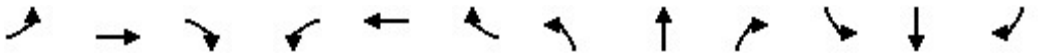




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	0	19	0	0	0	50	1201	6	6	792	60
Future Volume (vph)	34	0	19	0	0	0	50	1201	6	6	792	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	14	13	12	12	12	11	11	11	11	12	14
Total Lost time (s)	4.0	4.0	6.0					4.0			4.0	
Lane Util. Factor	0.95	0.95	1.00					0.95			0.95	
Frt	1.00	1.00	0.85					1.00			0.99	
Flt Protected	0.95	0.95	1.00					1.00			1.00	
Satd. Flow (prot)	1672	1726	1589					3378			3406	
Flt Permitted	0.95	0.95	1.00					0.90			0.95	
Satd. Flow (perm)	1672	1726	1589					3040			3221	
Peak-hour factor, PHF	0.74	0.74	0.74	0.25	0.25	0.25	0.96	0.96	0.96	0.97	0.97	0.97
Adj. Flow (vph)	46	0	26	0	0	0	52	1251	6	6	816	62
RTOR Reduction (vph)	0	0	20	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	23	23	6	0	0	0	0	1309	0	0	880	0
Heavy Vehicles (%)	6%	0%	5%	0%	0%	0%	4%	3%	0%	0%	5%	3%
Turn Type	Split	NA	pt+ov				pm+pt	NA		Perm	NA	
Protected Phases	4	4	4 5	3	3		5	2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	3.2	3.2	10.8					32.3			27.7	
Effective Green, g (s)	5.2	5.2	10.8					34.3			29.7	
Actuated g/C Ratio	0.11	0.11	0.23					0.72			0.63	
Clearance Time (s)	6.0	6.0						6.0			6.0	
Vehicle Extension (s)	3.0	3.0						3.0			3.0	
Lane Grp Cap (vph)	183	188	361					2220			2013	
v/s Ratio Prot	c0.01	0.01	0.00					c0.04				
v/s Ratio Perm								0.38			0.27	
v/c Ratio	0.13	0.12	0.02					0.59			0.44	
Uniform Delay, d1	19.1	19.1	14.2					3.2			4.6	
Progression Factor	1.00	1.00	1.00					1.00			1.00	
Incremental Delay, d2	0.3	0.3	0.0					0.4			0.2	
Delay (s)	19.4	19.4	14.2					3.6			4.7	
Level of Service	B	B	B					A			A	
Approach Delay (s)		17.5			0.0			3.6			4.7	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	47.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		

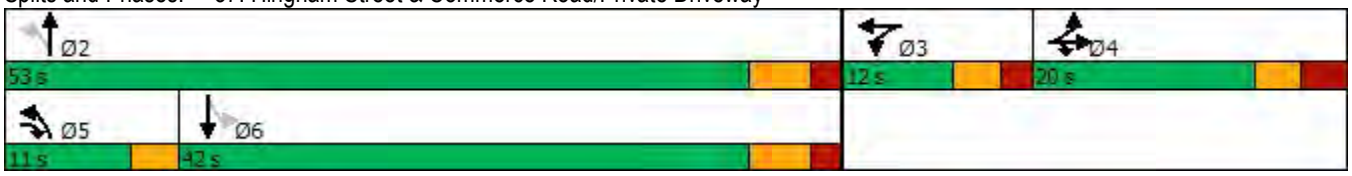
c Critical Lane Group

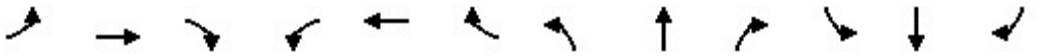


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	0	71	4	0	4	20	944	3	1	1274	40
Future Volume (vph)	141	0	71	4	0	4	20	944	3	1	1274	40
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850		0.932						0.995	
Flt Protected	0.950	0.950			0.976			0.999				
Satd. Flow (prot)	1772	1829	1669	0	1728	0	0	3452	0	0	3557	0
Flt Permitted	0.950	0.950			0.976			0.915			0.954	
Satd. Flow (perm)	1772	1829	1669	0	1728	0	0	3162	0	0	3394	0
Satd. Flow (RTOR)			103		154			1			5	
Adj. Flow (vph)	164	0	83	8	0	8	26	1210	4	1	1300	41
Lane Group Flow (vph)	82	82	83	0	16	0	0	1240	0	0	1342	0
Turn Type	Split	NA	pt+ov	Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4	4 5	3	3		5	2			6	
Permitted Phases							2			6		
Detector Phase	4	4	4 5	3	3		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		10.0	10.0		10.0	24.0		24.0	24.0	
Total Split (s)	20.0	20.0		12.0	12.0		11.0	53.0		42.0	42.0	
Total Split (%)	23.5%	23.5%		14.1%	14.1%		12.9%	62.4%		49.4%	49.4%	
Maximum Green (s)	14.0	14.0		7.0	7.0		8.0	47.0		36.0	36.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		2.0	2.0		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0			-1.0			-2.0			-2.0	
Total Lost Time (s)	4.0	4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead	Lead		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
v/c Ratio	0.23	0.22	0.16		0.04			0.52			0.62	
Control Delay	27.5	27.4	4.5		0.2			6.8			12.5	
Queue Delay	0.0	0.0	0.0		0.0			0.0			0.0	
Total Delay	27.5	27.4	4.5		0.2			6.8			12.5	
Queue Length 50th (ft)	30	30	0		0			87			167	
Queue Length 95th (ft)	76	75	21		0			204			388	
Internal Link Dist (ft)		730			551			1680			158	
Turn Bay Length (ft)	145		125									
Base Capacity (vph)	598	618	655		419			2499			2240	
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	0.14	0.13	0.13		0.04			0.50			0.60	

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 58.8
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 37: Hingham Street & Commerce Road/Private Driveway

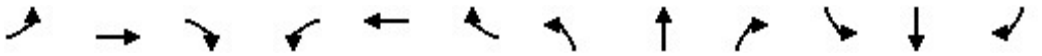




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	0	71	4	0	4	20	944	3	1	1274	40
Future Volume (vph)	141	0	71	4	0	4	20	944	3	1	1274	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	14	13	12	12	12	11	11	11	11	12	14
Total Lost time (s)	4.0	4.0	6.0		4.0			4.0			4.0	
Lane Util. Factor	0.95	0.95	1.00		1.00			0.95			0.95	
Frt	1.00	1.00	0.85		0.93			1.00			1.00	
Flt Protected	0.95	0.95	1.00		0.98			1.00			1.00	
Satd. Flow (prot)	1772	1829	1669		1729			3451			3559	
Flt Permitted	0.95	0.95	1.00		0.98			0.91			0.95	
Satd. Flow (perm)	1772	1829	1669		1729			3160			3396	
Peak-hour factor, PHF	0.86	0.86	0.86	0.50	0.50	0.50	0.78	0.78	0.78	0.98	0.98	0.98
Adj. Flow (vph)	164	0	83	8	0	8	26	1210	4	1	1300	41
RTOR Reduction (vph)	0	0	62	0	16	0	0	0	0	0	2	0
Lane Group Flow (vph)	82	82	21	0	0	0	0	1240	0	0	1340	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Turn Type	Split	NA	pt+ov	Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4	4 5	3	3		5	2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	6.6	6.6	16.5		0.8			40.0			33.1	
Effective Green, g (s)	8.6	8.6	16.5		1.8			42.0			35.1	
Actuated g/C Ratio	0.13	0.13	0.26		0.03			0.65			0.55	
Clearance Time (s)	6.0	6.0			5.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)	236	244	427		48			2087			1850	
v/s Ratio Prot	c0.05	0.04	0.01		c0.00			c0.05				
v/s Ratio Perm								0.33			c0.39	
v/c Ratio	0.35	0.34	0.05		0.01			0.59			0.72	
Uniform Delay, d1	25.4	25.3	18.0		30.4			6.4			11.0	
Progression Factor	1.00	1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2	0.9	0.8	0.0		0.1			0.5			1.4	
Delay (s)	26.2	26.1	18.1		30.5			6.8			12.4	
Level of Service	C	C	B		C			A			B	
Approach Delay (s)		23.5			30.5			6.8			12.4	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	64.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

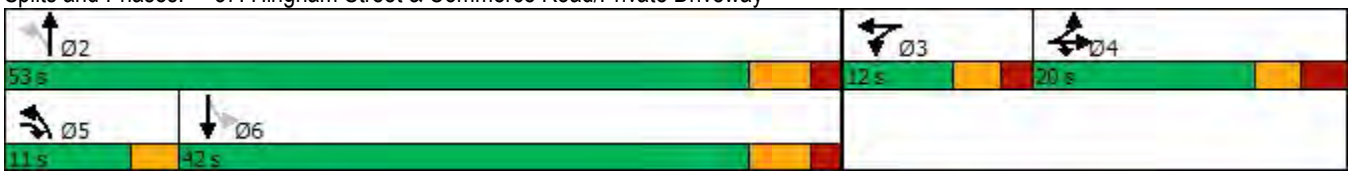
c Critical Lane Group

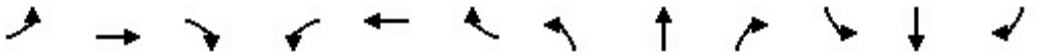


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	0	23	0	0	0	25	827	0	0	698	39
Future Volume (vph)	72	0	23	0	0	0	25	827	0	0	698	39
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850								0.992	
Flt Protected	0.950	0.950						0.999				
Satd. Flow (prot)	1772	1829	1669	0	1900	0	0	3453	0	0	3548	0
Flt Permitted	0.950	0.950						0.926				
Satd. Flow (perm)	1772	1829	1669	0	1900	0	0	3200	0	0	3548	0
Satd. Flow (RTOR)			103								9	
Adj. Flow (vph)	88	0	28	0	0	0	28	929	0	0	767	43
Lane Group Flow (vph)	44	44	28	0	0	0	0	957	0	0	810	0
Turn Type	Split	NA	pt+ov				pm+pt	NA			NA	
Protected Phases	4	4	4 5	3	3		5	2			6	
Permitted Phases							2			6		
Detector Phase	4	4	4 5	3	3		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		10.0	10.0		10.0	24.0		24.0	24.0	
Total Split (s)	20.0	20.0		12.0	12.0		11.0	53.0		42.0	42.0	
Total Split (%)	23.5%	23.5%		14.1%	14.1%		12.9%	62.4%		49.4%	49.4%	
Maximum Green (s)	14.0	14.0		7.0	7.0		8.0	47.0		36.0	36.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		2.0	2.0		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0			-1.0			-2.0			-2.0	
Total Lost Time (s)	4.0	4.0			4.0			4.0			4.0	
Lead/Lag	Lag	Lag		Lead	Lead		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
v/c Ratio	0.08	0.08	0.04					0.39			0.31	
Control Delay	15.0	14.9	0.1					4.3			5.2	
Queue Delay	0.0	0.0	0.0					0.0			0.0	
Total Delay	15.0	14.9	0.1					4.3			5.2	
Queue Length 50th (ft)	7	7	0					52			40	
Queue Length 95th (ft)	31	31	0					88			118	
Internal Link Dist (ft)		730			551			1680			158	
Turn Bay Length (ft)	145		125									
Base Capacity (vph)	1005	1038	973					3153			3290	
Starvation Cap Reductn	0	0	0					0			0	
Spillback Cap Reductn	0	0	0					0			0	
Storage Cap Reductn	0	0	0					0			0	
Reduced v/c Ratio	0.04	0.04	0.03					0.30			0.25	

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 34
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

Splits and Phases: 37: Hingham Street & Commerce Road/Private Driveway





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	0	23	0	0	0	25	827	0	0	698	39
Future Volume (vph)	72	0	23	0	0	0	25	827	0	0	698	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	14	13	12	12	12	11	11	11	11	12	14
Total Lost time (s)	4.0	4.0	6.0					4.0			4.0	
Lane Util. Factor	0.95	0.95	1.00					0.95			0.95	
Frt	1.00	1.00	0.85					1.00			0.99	
Flt Protected	0.95	0.95	1.00					1.00			1.00	
Satd. Flow (prot)	1772	1829	1669					3451			3548	
Flt Permitted	0.95	0.95	1.00					0.93			1.00	
Satd. Flow (perm)	1772	1829	1669					3200			3548	
Peak-hour factor, PHF	0.82	0.82	0.82	0.25	0.25	0.25	0.89	0.89	0.89	0.91	0.91	0.91
Adj. Flow (vph)	88	0	28	0	0	0	28	929	0	0	767	43
RTOR Reduction (vph)	0	0	21	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	44	44	7	0	0	0	0	957	0	0	806	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Turn Type	Split	NA	pt+ov				pm+pt	NA			NA	
Protected Phases	4	4	4 5	3	3		5	2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	3.5	3.5	10.2					23.0			19.3	
Effective Green, g (s)	5.5	5.5	10.2					25.0			21.3	
Actuated g/C Ratio	0.14	0.14	0.26					0.65			0.55	
Clearance Time (s)	6.0	6.0						6.0			6.0	
Vehicle Extension (s)	3.0	3.0						3.0			3.0	
Lane Grp Cap (vph)	253	261	442					2095			1962	
v/s Ratio Prot	c0.02	0.02	0.00					c0.03			0.23	
v/s Ratio Perm								0.26				
v/c Ratio	0.17	0.17	0.02					0.46			0.41	
Uniform Delay, d1	14.5	14.5	10.4					3.4			5.0	
Progression Factor	1.00	1.00	1.00					1.00			1.00	
Incremental Delay, d2	0.3	0.3	0.0					0.2			0.1	
Delay (s)	14.8	14.8	10.5					3.5			5.1	
Level of Service	B	B	B					A			A	
Approach Delay (s)		13.8			0.0			3.5			5.1	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	38.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Hingham Street at Reservoir Park Drive



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	543	32	116	686	210	606
Future Volume (vph)	543	32	116	686	210	606
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1678	1507	1752	1783	1759	1449
Flt Permitted	0.950		0.500			
Satd. Flow (perm)	1678	1507	922	1783	1759	1449
Satd. Flow (RTOR)		34				631
Adj. Flow (vph)	584	34	135	798	228	659
Lane Group Flow (vph)	584	34	135	798	228	659
Turn Type	Prot	Perm	pm+pt	NA	NA	pt+ov
Protected Phases	4		5	2	6	6 4
Permitted Phases		4	2			
Detector Phase	4	4	5	2	6	6 4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	9.0	8.0	10.0	10.0	
Total Split (s)	40.0	40.0	12.0	47.0	35.0	
Total Split (%)	46.0%	46.0%	13.8%	54.0%	40.2%	
Maximum Green (s)	36.0	36.0	9.0	42.0	30.0	
Yellow Time (s)	3.0	3.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	0.0	1.0	1.0	
Lost Time Adjust (s)	-1.0	-1.0	0.0	-1.0	-1.0	
Total Lost Time (s)	3.0	3.0	3.0	4.0	4.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	
v/c Ratio	0.84	0.05	0.24	0.90	0.34	0.50
Control Delay	34.7	5.6	12.5	34.8	21.4	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.7	5.6	12.5	34.8	21.4	1.6
Queue Length 50th (ft)	274	0	38	382	91	2
Queue Length 95th (ft)	#460	16	65	#580	151	19
Internal Link Dist (ft)	298			509	1680	
Turn Bay Length (ft)		300	150			400
Base Capacity (vph)	802	739	566	991	705	1317
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	0.73	0.05	0.24	0.81	0.32	0.50

Intersection Summary
Cycle Length: 87
Actuated Cycle Length: 79.6
Natural Cycle: 65
Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 38: Hingham Street & Reservoir Park Drive





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	543	32	116	686	210	606
Future Volume (vph)	543	32	116	686	210	606
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	10	12	11	12	10
Total Lost time (s)	3.0	3.0	3.0	4.0	4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1678	1507	1752	1783	1759	1449
Flt Permitted	0.95	1.00	0.50	1.00	1.00	1.00
Satd. Flow (perm)	1678	1507	923	1783	1759	1449
Peak-hour factor, PHF	0.93	0.93	0.86	0.86	0.92	0.92
Adj. Flow (vph)	584	34	135	798	228	659
RTOR Reduction (vph)	0	20	0	0	0	106
Lane Group Flow (vph)	584	14	135	798	228	553
Heavy Vehicles (%)	4%	0%	3%	3%	8%	4%
Turn Type	Prot	Perm	pm+pt	NA	NA	pt+ov
Protected Phases	4		5	2	6	6 4
Permitted Phases		4	2			
Actuated Green, G (s)	31.8	31.8	39.2	39.2	29.7	66.5
Effective Green, g (s)	32.8	32.8	39.2	40.2	30.7	66.5
Actuated g/C Ratio	0.41	0.41	0.49	0.50	0.38	0.83
Clearance Time (s)	4.0	4.0	3.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	687	617	519	895	675	1204
v/s Ratio Prot	c0.35		0.02	c0.45	0.13	0.38
v/s Ratio Perm		0.01	0.11			
v/c Ratio	0.85	0.02	0.26	0.89	0.34	0.46
Uniform Delay, d1	21.4	14.1	11.5	17.9	17.5	1.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.9	0.0	0.3	11.1	0.3	0.3
Delay (s)	31.2	14.1	11.8	29.0	17.8	2.1
Level of Service	C	B	B	C	B	A
Approach Delay (s)	30.3			26.5	6.1	
Approach LOS	C			C	A	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	595	103	56	298	550	771
Future Volume (vph)	595	103	56	298	550	771
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1728	1507	1770	1818	1881	1492
Flt Permitted	0.950		0.133			
Satd. Flow (perm)	1728	1507	248	1818	1881	1492
Satd. Flow (RTOR)		104				653
Adj. Flow (vph)	601	104	64	343	579	812
Lane Group Flow (vph)	601	104	64	343	579	812
Turn Type	Prot	Perm	pm+pt	NA	NA	pt+ov
Protected Phases	4		5	2	6	6 4
Permitted Phases		4	2			
Detector Phase	4	4	5	2	6	6 4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	9.0	8.0	10.0	10.0	
Total Split (s)	40.0	40.0	12.0	47.0	35.0	
Total Split (%)	46.0%	46.0%	13.8%	54.0%	40.2%	
Maximum Green (s)	36.0	36.0	9.0	42.0	30.0	
Yellow Time (s)	3.0	3.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	0.0	1.0	1.0	
Lost Time Adjust (s)	-1.0	-1.0	0.0	-1.0	-1.0	
Total Lost Time (s)	3.0	3.0	3.0	4.0	4.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	
v/c Ratio	0.82	0.15	0.23	0.39	0.81	0.60
Control Delay	32.5	4.0	13.1	14.9	35.1	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	4.0	13.1	14.9	35.1	2.5
Queue Length 50th (ft)	275	0	17	112	284	12
Queue Length 95th (ft)	#469	28	36	167	#480	35
Internal Link Dist (ft)	298			509	1680	
Turn Bay Length (ft)		300	150			400
Base Capacity (vph)	860	802	307	1052	784	1374
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	0.70	0.13	0.21	0.33	0.74	0.59

Intersection Summary
Cycle Length: 87
Actuated Cycle Length: 77.9
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 38: Hingham Street & Reservoir Park Drive





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	595	103	56	298	550	771
Future Volume (vph)	595	103	56	298	550	771
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	10	12	11	12	10
Total Lost time (s)	3.0	3.0	3.0	4.0	4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1728	1507	1770	1818	1881	1492
Flt Permitted	0.95	1.00	0.13	1.00	1.00	1.00
Satd. Flow (perm)	1728	1507	247	1818	1881	1492
Peak-hour factor, PHF	0.99	0.99	0.87	0.87	0.95	0.95
Adj. Flow (vph)	601	104	64	343	579	812
RTOR Reduction (vph)	0	60	0	0	0	108
Lane Group Flow (vph)	601	44	64	343	579	704
Heavy Vehicles (%)	1%	0%	2%	1%	1%	1%
Turn Type	Prot	Perm	pm+pt	NA	NA	pt+ov
Protected Phases	4		5	2	6	6 4
Permitted Phases		4	2			
Actuated Green, G (s)	31.8	31.8	37.5	37.5	28.5	65.3
Effective Green, g (s)	32.8	32.8	37.5	38.5	29.5	65.3
Actuated g/C Ratio	0.42	0.42	0.48	0.49	0.38	0.83
Clearance Time (s)	4.0	4.0	3.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	723	631	235	893	708	1244
v/s Ratio Prot	c0.35		0.02	c0.19	c0.31	0.47
v/s Ratio Perm		0.03	0.11			
v/c Ratio	0.83	0.07	0.27	0.38	0.82	0.57
Uniform Delay, d1	20.3	13.6	14.4	12.5	22.0	2.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.1	0.0	0.6	0.3	7.3	0.6
Delay (s)	28.4	13.7	15.0	12.7	29.3	2.6
Level of Service	C	B	B	B	C	A
Approach Delay (s)	26.2			13.1	13.7	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	78.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	464	52	57	350	302	402
Future Volume (vph)	464	52	57	350	302	402
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1728	1478	1805	1818	1881	1492
Flt Permitted	0.950		0.355			
Satd. Flow (perm)	1728	1478	674	1818	1881	1492
Satd. Flow (RTOR)		60				452
Adj. Flow (vph)	533	60	66	402	339	452
Lane Group Flow (vph)	533	60	66	402	339	452
Turn Type	Prot	Perm	pm+pt	NA	NA	pt+ov
Protected Phases	4		5	2	6	6 4
Permitted Phases		4	2			
Detector Phase	4	4	5	2	6	6 4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.0	9.0	8.0	10.0	10.0	
Total Split (s)	40.0	40.0	12.0	47.0	35.0	
Total Split (%)	46.0%	46.0%	13.8%	54.0%	40.2%	
Maximum Green (s)	36.0	36.0	9.0	42.0	30.0	
Yellow Time (s)	3.0	3.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	0.0	1.0	1.0	
Lost Time Adjust (s)	-1.0	-1.0	0.0	-1.0	-1.0	
Total Lost Time (s)	3.0	3.0	3.0	4.0	4.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	
v/c Ratio	0.71	0.09	0.15	0.51	0.52	0.33
Control Delay	22.7	4.7	11.3	15.7	22.4	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	4.7	11.3	15.7	22.4	0.9
Queue Length 50th (ft)	174	0	13	103	112	0
Queue Length 95th (ft)	340	20	37	199	221	13
Internal Link Dist (ft)	298			509	1680	
Turn Bay Length (ft)		300	150			400
Base Capacity (vph)	1130	988	497	1323	1092	1392
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	0.47	0.06	0.13	0.30	0.31	0.32

Intersection Summary
Cycle Length: 87
Actuated Cycle Length: 61.7
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

Splits and Phases: 38: Hingham Street & Reservoir Park Drive





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	464	52	57	350	302	402
Future Volume (vph)	464	52	57	350	302	402
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	10	12	11	12	10
Total Lost time (s)	3.0	3.0	3.0	4.0	4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1728	1478	1805	1818	1881	1492
Flt Permitted	0.95	1.00	0.35	1.00	1.00	1.00
Satd. Flow (perm)	1728	1478	674	1818	1881	1492
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.89	0.89
Adj. Flow (vph)	533	60	66	402	339	452
RTOR Reduction (vph)	0	34	0	0	0	80
Lane Group Flow (vph)	533	26	66	402	339	372
Heavy Vehicles (%)	1%	2%	0%	1%	1%	1%
Turn Type	Prot	Perm	pm+pt	NA	NA	pt+ov
Protected Phases	4		5	2	6	6 4
Permitted Phases		4	2			
Actuated Green, G (s)	25.6	25.6	27.2	27.2	20.2	50.8
Effective Green, g (s)	26.6	26.6	27.2	28.2	21.2	50.8
Actuated g/C Ratio	0.43	0.43	0.44	0.46	0.34	0.82
Clearance Time (s)	4.0	4.0	3.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	743	636	369	829	645	1226
v/s Ratio Prot	c0.31		0.01	c0.22	0.18	0.25
v/s Ratio Perm		0.02	0.07			
v/c Ratio	0.72	0.04	0.18	0.48	0.53	0.30
Uniform Delay, d1	14.5	10.2	10.7	11.7	16.3	1.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.3	0.0	0.2	0.4	0.8	0.1
Delay (s)	17.8	10.2	10.9	12.2	17.0	1.4
Level of Service	B	B	B	B	B	A
Approach Delay (s)	17.1			12.0	8.1	
Approach LOS	B			B	A	

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	61.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Weymouth Street at Reservoir Park Drive



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	114	140	35	29	442	389	47	148	17	186	112	288
Future Volume (vph)	114	140	35	29	442	389	47	148	17	186	112	288
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.970				0.850			0.850		0.892	
Flt Protected	0.950				0.997		0.950			0.950		
Satd. Flow (prot)	1646	1726	0	0	1806	1463	1678	1783	1561	1616	1606	0
Flt Permitted	0.180				0.973		0.451			0.433		
Satd. Flow (perm)	312	1726	0	0	1763	1463	796	1783	1561	736	1606	0
Satd. Flow (RTOR)		12				402			83		97	
Adj. Flow (vph)	121	149	37	32	486	427	53	168	19	209	126	324
Lane Group Flow (vph)	121	186	0	0	518	427	53	168	19	209	450	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases	1	6			2			4		3	8	
Permitted Phases	6			2		2	4		4	8		
Detector Phase	1	6		2	2	2	4	4	4	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	23.0		23.0	23.0	23.0	22.5	22.5	22.5	9.5	22.5	
Total Split (s)	15.0	64.0		49.0	49.0	49.0	24.0	24.0	24.0	16.0	40.0	
Total Split (%)	11.4%	48.5%		37.1%	37.1%	37.1%	18.2%	18.2%	18.2%	12.1%	30.3%	
Maximum Green (s)	12.0	59.0		44.0	44.0	44.0	20.0	20.0	20.0	13.0	36.0	
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	
Lost Time Adjust (s)	0.0	-1.0			-1.0	-1.0	-1.0	-1.0	-1.0	0.0	-1.0	
Total Lost Time (s)	3.0	4.0			4.0	4.0	3.0	3.0	3.0	3.0	3.0	
Lead/Lag	Lead			Lag	Lag	Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.43	0.21			0.78	0.53	0.30	0.42	0.05	0.53	0.67	
Control Delay	18.9	14.6			37.6	6.1	44.6	41.6	0.2	32.3	28.6	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.9	14.6			37.6	6.1	44.6	41.6	0.2	32.3	28.6	
Queue Length 50th (ft)	34	51			254	9	26	86	0	85	168	
Queue Length 95th (ft)	99	142			#609	102	85	208	0	#227	#474	
Internal Link Dist (ft)		529			909			796			257	
Turn Bay Length (ft)	310					270	410		650	265		
Base Capacity (vph)	329	1100			839	907	177	396	411	401	687	
Starvation Cap Reductn	0	0			0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0			0	0	0	0	0	0	0	
Storage Cap Reductn	0	0			0	0	0	0	0	0	0	
Reduced v/c Ratio	0.37	0.17			0.62	0.47	0.30	0.42	0.05	0.52	0.66	

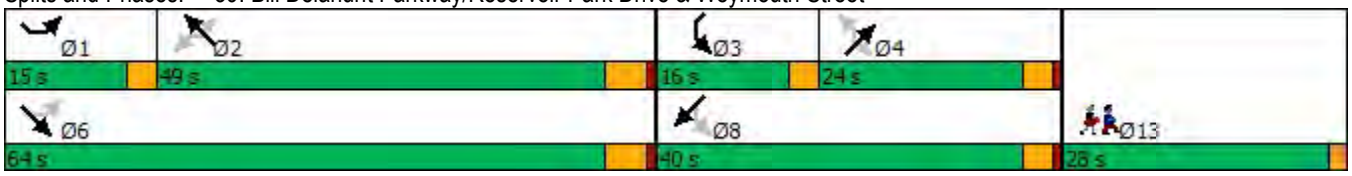
Intersection Summary
Cycle Length: 132

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	28.0
Total Split (s)	28.0
Total Split (%)	21%
Maximum Green (s)	26.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	19.0
Pedestrian Calls (#/hr)	2
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 97.8
Natural Cycle: 95
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 39: Bill Delahunt Parkway/Reservoir Park Drive & Weymouth Street



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	114	140	35	29	442	389	47	148	17	186	112	288
Future Volume (vph)	114	140	35	29	442	389	47	148	17	186	112	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	10	11	11	11	11	11	11
Total Lost time (s)	3.0	4.0			4.0	4.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97			1.00	0.85	1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1646	1727			1806	1463	1678	1783	1561	1616	1606	
Flt Permitted	0.18	1.00			0.97	1.00	0.45	1.00	1.00	0.43	1.00	
Satd. Flow (perm)	312	1727			1763	1463	796	1783	1561	736	1606	
Peak-hour factor, PHF	0.94	0.94	0.94	0.91	0.91	0.91	0.88	0.88	0.88	0.89	0.89	0.89
Adj. Flow (vph)	121	149	37	32	486	427	53	168	19	209	126	324
RTOR Reduction (vph)	0	6	0	0	0	252	0	0	15	0	61	0
Lane Group Flow (vph)	121	180	0	0	518	175	53	168	4	209	389	0
Heavy Vehicles (%)	6%	4%	0%	7%	1%	3%	4%	3%	0%	8%	2%	2%
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases	1	6			2			4		3	8	
Permitted Phases	6			2		2	4		4	8		
Actuated Green, G (s)	48.1	48.1			36.0	36.0	20.8	20.8	20.8	36.2	36.2	
Effective Green, g (s)	48.1	49.1			37.0	37.0	21.8	21.8	21.8	36.2	37.2	
Actuated g/C Ratio	0.48	0.49			0.37	0.37	0.22	0.22	0.22	0.36	0.38	
Clearance Time (s)	3.0	5.0			5.0	5.0	4.0	4.0	4.0	3.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	273	854			657	545	174	391	343	378	602	
v/s Ratio Prot	c0.04	0.10						0.09		0.07	c0.24	
v/s Ratio Perm	0.17				c0.29	0.12	0.07		0.00	0.13		
v/c Ratio	0.44	0.21			0.79	0.32	0.30	0.43	0.01	0.55	0.65	
Uniform Delay, d1	17.7	14.1			27.6	22.2	32.4	33.3	30.3	23.4	25.6	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	0.1			6.2	0.3	1.0	0.8	0.0	1.8	2.4	
Delay (s)	18.8	14.2			33.9	22.5	33.4	34.1	30.3	25.1	28.0	
Level of Service	B	B			C	C	C	C	C	C	C	
Approach Delay (s)		16.0			28.7			33.6			27.1	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	99.2	Sum of lost time (s)	15.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	264	512	76	30	245	211	50	140	50	368	274	257
Future Volume (vph)	264	512	76	30	245	211	50	140	50	368	274	257
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981				0.850			0.850		0.927	
Flt Protected	0.950				0.995		0.950			0.950		
Satd. Flow (prot)	1745	1799	0	0	1795	1478	1745	1837	1561	1711	1686	0
Flt Permitted	0.324				0.888		0.359			0.410		
Satd. Flow (perm)	595	1799	0	0	1602	1478	659	1837	1561	738	1686	0
Satd. Flow (RTOR)		7				232			83		36	
Adj. Flow (vph)	278	539	80	33	269	232	69	194	69	387	288	271
Lane Group Flow (vph)	278	619	0	0	302	232	69	194	69	387	559	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases	1	6			2			4		3	8	
Permitted Phases	6			2		2	4		4	8		
Detector Phase	1	6		2	2	2	4	4	4	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	23.0		23.0	23.0	23.0	22.5	22.5	22.5	9.5	22.5	
Total Split (s)	15.0	64.0		49.0	49.0	49.0	24.0	24.0	24.0	16.0	40.0	
Total Split (%)	11.4%	48.5%		37.1%	37.1%	37.1%	18.2%	18.2%	18.2%	12.1%	30.3%	
Maximum Green (s)	12.0	59.0		44.0	44.0	44.0	20.0	20.0	20.0	13.0	36.0	
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	
Lost Time Adjust (s)	0.0	-1.0			-1.0	-1.0	-1.0	-1.0	-1.0	0.0	-1.0	
Total Lost Time (s)	3.0	4.0			4.0	4.0	3.0	3.0	3.0	3.0	3.0	
Lead/Lag	Lead			Lag	Lag	Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.65	0.76			0.66	0.39	0.44	0.44	0.16	0.84	0.76	
Control Delay	25.4	28.2			36.6	5.8	46.6	38.0	7.9	43.1	32.4	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	25.4	28.2			36.6	5.8	46.6	38.0	7.9	43.1	32.4	
Queue Length 50th (ft)	85	246			137	0	30	85	0	141	218	
Queue Length 95th (ft)	219	584			306	57	87	188	13	#620	#758	
Internal Link Dist (ft)		529			909			796			257	
Turn Bay Length (ft)	310					270	410		650	265		
Base Capacity (vph)	434	1240			826	875	158	442	438	458	736	
Starvation Cap Reductn	0	0			0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0			0	0	0	0	0	0	0	
Storage Cap Reductn	0	0			0	0	0	0	0	0	0	
Reduced v/c Ratio	0.64	0.50			0.37	0.27	0.44	0.44	0.16	0.84	0.76	

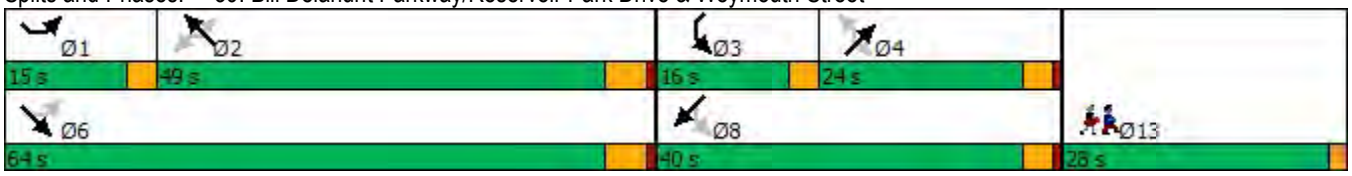
Intersection Summary
Cycle Length: 132

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	28.0
Total Split (s)	28.0
Total Split (%)	21%
Maximum Green (s)	26.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	19.0
Pedestrian Calls (#/hr)	2
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 91
Natural Cycle: 135
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 39: Bill Delahunt Parkway/Reservoir Park Drive & Weymouth Street





Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	264	512	76	30	245	211	50	140	50	368	274	257
Future Volume (vph)	264	512	76	30	245	211	50	140	50	368	274	257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	10	11	11	11	11	11	11
Total Lost time (s)	3.0	4.0			4.0	4.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98			1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00			0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1745	1799			1795	1478	1745	1837	1561	1711	1687	
Flt Permitted	0.32	1.00			0.89	1.00	0.36	1.00	1.00	0.41	1.00	
Satd. Flow (perm)	595	1799			1602	1478	659	1837	1561	739	1687	
Peak-hour factor, PHF	0.95	0.95	0.95	0.91	0.91	0.91	0.72	0.72	0.72	0.95	0.95	0.95
Adj. Flow (vph)	278	539	80	33	269	232	69	194	69	387	288	271
RTOR Reduction (vph)	0	4	0	0	0	166	0	0	53	0	21	0
Lane Group Flow (vph)	278	615	0	0	302	66	69	194	16	387	538	0
Heavy Vehicles (%)	0%	0%	1%	0%	2%	2%	0%	0%	0%	2%	0%	2%
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases	1	6			2			4		3	8	
Permitted Phases	6			2		2	4		4	8		
Actuated Green, G (s)	40.2	40.2			25.2	25.2	21.0	21.0	21.0	37.6	37.6	
Effective Green, g (s)	40.2	41.2			26.2	26.2	22.0	22.0	22.0	37.6	38.6	
Actuated g/C Ratio	0.44	0.45			0.28	0.28	0.24	0.24	0.24	0.41	0.42	
Clearance Time (s)	3.0	5.0			5.0	5.0	4.0	4.0	4.0	3.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	408	802			454	419	156	437	371	443	704	
v/s Ratio Prot	0.09	c0.34						0.11		c0.13	0.32	
v/s Ratio Perm	0.21				0.19	0.04	0.10		0.01	c0.23		
v/c Ratio	0.68	0.77			0.67	0.16	0.44	0.44	0.04	0.87	0.76	
Uniform Delay, d1	18.7	21.6			29.2	24.8	30.0	30.0	27.1	22.8	23.0	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.6	4.4			3.7	0.2	2.0	0.7	0.0	17.1	4.9	
Delay (s)	23.3	26.0			32.9	25.0	32.0	30.7	27.2	39.9	28.0	
Level of Service	C	C			C	C	C	C	C	D	C	
Approach Delay (s)		25.2			29.5			30.2			32.8	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	92.4	Sum of lost time (s)	15.0
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	201	260	38	22	254	189	24	108	26	141	114	199
Future Volume (vph)	201	260	38	22	254	189	24	108	26	141	114	199
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981				0.850			0.850		0.905	
Flt Protected	0.950				0.996		0.950			0.950		
Satd. Flow (prot)	1711	1786	0	0	1829	1478	1745	1783	1561	1728	1646	0
Flt Permitted	0.356				0.952		0.556			0.439		
Satd. Flow (perm)	641	1786	0	0	1749	1478	1021	1783	1561	798	1646	0
Satd. Flow (RTOR)		7				197			83		66	
Adj. Flow (vph)	248	321	47	23	265	197	26	117	28	153	124	216
Lane Group Flow (vph)	248	368	0	0	288	197	26	117	28	153	340	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases	1	6			2			4		3	8	
Permitted Phases	6			2		2	4		4	8		
Detector Phase	1	6		2	2	2	4	4	4	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	23.0		23.0	23.0	23.0	22.5	22.5	22.5	9.5	22.5	
Total Split (s)	15.0	64.0		49.0	49.0	49.0	24.0	24.0	24.0	16.0	40.0	
Total Split (%)	11.4%	48.5%		37.1%	37.1%	37.1%	18.2%	18.2%	18.2%	12.1%	30.3%	
Maximum Green (s)	12.0	59.0		44.0	44.0	44.0	20.0	20.0	20.0	13.0	36.0	
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	
Lost Time Adjust (s)	0.0	-1.0			-1.0	-1.0	-1.0	-1.0	-1.0	0.0	-1.0	
Total Lost Time (s)	3.0	4.0			4.0	4.0	3.0	3.0	3.0	3.0	3.0	
Lead/Lag	Lead			Lag	Lag	Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.49	0.41			0.57	0.35	0.14	0.37	0.08	0.36	0.57	
Control Delay	17.6	15.8			29.7	6.3	34.8	35.2	0.5	23.5	22.2	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.6	15.8			29.7	6.3	34.8	35.2	0.5	23.5	22.2	
Queue Length 50th (ft)	47	77			93	0	9	40	0	40	78	
Queue Length 95th (ft)	173	258			286	56	46	144	0	152	293	
Internal Link Dist (ft)		529			909			796			257	
Turn Bay Length (ft)	310					270	410		650	265		
Base Capacity (vph)	541	1537			1239	1105	348	609	587	474	1016	
Starvation Cap Reductn	0	0			0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0			0	0	0	0	0	0	0	
Storage Cap Reductn	0	0			0	0	0	0	0	0	0	
Reduced v/c Ratio	0.46	0.24			0.23	0.18	0.07	0.19	0.05	0.32	0.33	

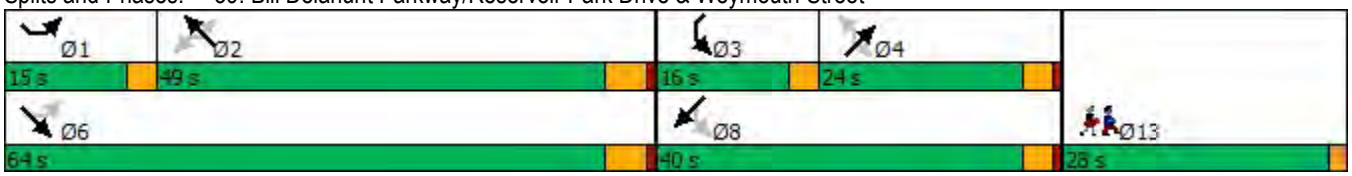
Intersection Summary
Cycle Length: 132

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	28.0
Total Split (s)	28.0
Total Split (%)	21%
Maximum Green (s)	26.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	19.0
Pedestrian Calls (#/hr)	1
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 70
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 39: Bill Delahunt Parkway/Reservoir Park Drive & Weymouth Street



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	201	260	38	22	254	189	24	108	26	141	114	199
Future Volume (vph)	201	260	38	22	254	189	24	108	26	141	114	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	10	11	11	11	11	11	11
Total Lost time (s)	3.0	4.0			4.0	4.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98			1.00	0.85	1.00	1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1711	1786			1829	1478	1745	1783	1561	1728	1645	
Flt Permitted	0.36	1.00			0.95	1.00	0.56	1.00	1.00	0.44	1.00	
Satd. Flow (perm)	641	1786			1749	1478	1022	1783	1561	798	1645	
Peak-hour factor, PHF	0.81	0.81	0.81	0.96	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	248	321	47	23	265	197	26	117	28	153	124	216
RTOR Reduction (vph)	0	4	0	0	0	141	0	0	24	0	43	0
Lane Group Flow (vph)	248	364	0	0	288	56	26	117	4	153	297	0
Heavy Vehicles (%)	2%	1%	0%	0%	0%	2%	0%	3%	0%	1%	1%	1%
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases	1	6			2			4		3	8	
Permitted Phases	6			2		2	4		4	8		
Actuated Green, G (s)	34.0	34.0			19.4	19.4	9.0	9.0	9.0	23.5	23.5	
Effective Green, g (s)	34.0	35.0			20.4	20.4	10.0	10.0	10.0	23.5	24.5	
Actuated g/C Ratio	0.48	0.49			0.29	0.29	0.14	0.14	0.14	0.33	0.34	
Clearance Time (s)	3.0	5.0			5.0	5.0	4.0	4.0	4.0	3.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	478	874			499	421	142	249	218	411	563	
v/s Ratio Prot	c0.08	0.20						0.07		0.06	c0.18	
v/s Ratio Perm	0.16				c0.16	0.04	0.03		0.00	0.06		
v/c Ratio	0.52	0.42			0.58	0.13	0.18	0.47	0.02	0.37	0.53	
Uniform Delay, d1	12.2	11.7			21.9	19.0	27.1	28.3	26.5	17.8	18.9	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	0.3			1.6	0.1	0.6	1.4	0.0	0.6	0.9	
Delay (s)	13.2	12.0			23.5	19.1	27.8	29.7	26.5	18.4	19.7	
Level of Service	B	B			C	B	C	C	C	B	B	
Approach Delay (s)		12.5			21.7			28.9			19.3	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	71.5	Sum of lost time (s)	15.0
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Weymouth Street at Sharp Street and Abington Street

Intersection	
Int Delay, s/veh	3.9

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	23	166	356	356	120	25
Future Vol, veh/h	23	166	356	356	120	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	84	84	84	84
Heavy Vehicles, %	0	8	3	1	0	4
Mvmt Flow	24	175	424	424	143	30

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	848	0	-	0	859	636
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	223	-
Critical Hdwy	4.1	-	-	-	6.4	6.24
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.336
Pot Cap-1 Maneuver	798	-	-	-	329	474
Stage 1	-	-	-	-	531	-
Stage 2	-	-	-	-	819	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	798	-	-	-	318	474
Mov Cap-2 Maneuver	-	-	-	-	318	-
Stage 1	-	-	-	-	513	-
Stage 2	-	-	-	-	819	-

Approach	SE	NW	SW
HCM Control Delay, s	1.2	0	26.4
HCM LOS			D

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	798	-	337
HCM Lane V/C Ratio	-	-	0.03	-	0.512
HCM Control Delay (s)	-	-	9.7	0	26.4
HCM Lane LOS	-	-	A	A	D
HCM 95th %tile Q(veh)	-	-	0.1	-	2.8

Intersection	
Int Delay, s/veh	69.5

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	66	394	272	241	321	23
Future Vol, veh/h	66	394	272	241	321	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	88	88	91	91
Heavy Vehicles, %	2	1	3	0	0	0
Mvmt Flow	69	410	309	274	353	25

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	583	0	-	0	994	446
Stage 1	-	-	-	-	446	-
Stage 2	-	-	-	-	548	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	991	-	-	-	~ 274	617
Stage 1	-	-	-	-	649	-
Stage 2	-	-	-	-	583	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	991	-	-	-	~ 249	617
Mov Cap-2 Maneuver	-	-	-	-	~ 249	-
Stage 1	-	-	-	-	591	-
Stage 2	-	-	-	-	583	-

Approach	SE	NW	SW
HCM Control Delay, s	1.3	0	263.1
HCM LOS			F

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	991	-	259
HCM Lane V/C Ratio	-	-	0.069	-	1.46
HCM Control Delay (s)	-	-	8.9	0	263.1
HCM Lane LOS	-	-	A	A	F
HCM 95th %tile Q(veh)	-	-	0.2	-	21.5

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

Intersection	
Int Delay, s/veh	5.6

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	14	274	229	223	176	12
Future Vol, veh/h	14	274	229	223	176	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	90	90	84	84
Heavy Vehicles, %	0	1	0	1	2	8
Mvmt Flow	17	334	254	248	210	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	502	0	-	0	746	378
Stage 1	-	-	-	-	378	-
Stage 2	-	-	-	-	368	-
Critical Hdwy	4.1	-	-	-	6.42	6.28
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.2	-	-	-	3.518	3.372
Pot Cap-1 Maneuver	1073	-	-	-	381	656
Stage 1	-	-	-	-	693	-
Stage 2	-	-	-	-	700	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1073	-	-	-	374	656
Mov Cap-2 Maneuver	-	-	-	-	374	-
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	700	-

Approach	SE	NW	SW
HCM Control Delay, s	0.4	0	26.5
HCM LOS			D

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	1073	-	385
HCM Lane V/C Ratio	-	-	0.016	-	0.581
HCM Control Delay (s)	-	-	8.4	0	26.5
HCM Lane LOS	-	-	A	A	D
HCM 95th %tile Q(veh)	-	-	0	-	3.5

Randolph Street at Forest Street

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	137	260	154	160	76	80
Future Vol, veh/h	137	260	154	160	76	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	75	75	91	91
Heavy Vehicles, %	2	4	3	1	1	1
Mvmt Flow	143	271	205	213	84	88

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	418	0	-	0	869	312
Stage 1	-	-	-	-	312	-
Stage 2	-	-	-	-	557	-
Critical Hdwy	4.12	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.218	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1141	-	-	-	324	731
Stage 1	-	-	-	-	744	-
Stage 2	-	-	-	-	576	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1141	-	-	-	276	731
Mov Cap-2 Maneuver	-	-	-	-	276	-
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	576	-

Approach	EB	WB	SB
HCM Control Delay, s	3	0	20.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1141	-	-	-	405
HCM Lane V/C Ratio	0.125	-	-	-	0.423
HCM Control Delay (s)	8.6	0	-	-	20.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	2.1

Intersection	
Int Delay, s/veh	66

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	114	251	248	103	252	172
Future Vol, veh/h	114	251	248	103	252	172
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	92	92	91	91
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	136	299	270	112	277	189

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	382	0	-	0	897	326
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	571	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1188	-	-	-	313	720
Stage 1	-	-	-	-	736	-
Stage 2	-	-	-	-	569	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1188	-	-	-	~ 270	720
Mov Cap-2 Maneuver	-	-	-	-	~ 270	-
Stage 1	-	-	-	-	635	-
Stage 2	-	-	-	-	569	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	179.2
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1188	-	-	-	362
HCM Lane V/C Ratio	0.114	-	-	-	1.287
HCM Control Delay (s)	8.4	0	-	-	179.2
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.4	-	-	-	21.2

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

Intersection	
Int Delay, s/veh	6.2

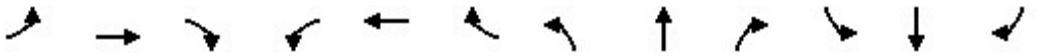
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	67	218	162	101	138	118
Future Vol, veh/h	67	218	162	101	138	118
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	77	77	97	97
Heavy Vehicles, %	2	1	1	1	1	2
Mvmt Flow	74	240	210	131	142	122

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	341	0	-	0	664	276
Stage 1	-	-	-	-	276	-
Stage 2	-	-	-	-	388	-
Critical Hdwy	4.12	-	-	-	6.41	6.22
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.218	-	-	-	3.509	3.318
Pot Cap-1 Maneuver	1218	-	-	-	427	763
Stage 1	-	-	-	-	773	-
Stage 2	-	-	-	-	688	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1218	-	-	-	397	763
Mov Cap-2 Maneuver	-	-	-	-	397	-
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	688	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	19.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1218	-	-	-	510
HCM Lane V/C Ratio	0.06	-	-	-	0.517
HCM Control Delay (s)	8.1	0	-	-	19.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	2.9

Derby Street at Pond Street



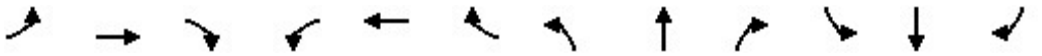
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	33	51	18	43	36	134	373	32	12	156	18
Future Volume (vph)	25	33	51	18	43	36	134	373	32	12	156	18
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.950			0.988				0.850
Flt Protected		0.979			0.991		0.950				0.996	
Satd. Flow (prot)	0	1973	1794	0	1832	0	1787	1839	0	0	949	1531
Flt Permitted		0.979			0.991		0.950				0.996	
Satd. Flow (perm)	0	1973	1794	0	1832	0	1787	1839	0	0	949	1531
Satd. Flow (RTOR)			221		29			5				156
Adj. Flow (vph)	30	40	61	21	49	41	146	405	35	14	177	20
Lane Group Flow (vph)	0	70	61	0	111	0	146	440	0	0	191	20
Turn Type	Split	NA	Free	Split	NA		Split	NA		Split	NA	Prot
Protected Phases	6	6		2	2		8	8		4	4	4
Permitted Phases			Free									
Detector Phase	6	6		2	2		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	10.0
Total Split (s)	24.0	24.0		15.0	15.0		26.0	26.0		19.0	19.0	19.0
Total Split (%)	28.6%	28.6%		17.9%	17.9%		31.0%	31.0%		22.6%	22.6%	22.6%
Maximum Green (s)	19.0	19.0		10.0	10.0		21.0	21.0		14.0	14.0	14.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None		None	None	None
v/c Ratio		0.25	0.03		0.38		0.26	0.75			0.82	0.04
Control Delay		31.1	0.0		26.7		21.2	32.3			59.8	0.2
Queue Delay		0.0	0.0		0.0		0.0	0.0			0.0	0.0
Total Delay		31.1	0.0		26.7		21.2	32.3			59.8	0.2
Queue Length 50th (ft)		29	0		33		48	172			84	0
Queue Length 95th (ft)		59	0		77		98	#339			#211	0
Internal Link Dist (ft)		486			805			510			830	
Turn Bay Length (ft)							145					150
Base Capacity (vph)		650	1794		355		648	670			234	495
Starvation Cap Reductn		0	0		0		0	0			0	0
Spillback Cap Reductn		0	0		0		0	0			0	0
Storage Cap Reductn		0	0		0		0	0			0	0
Reduced v/c Ratio		0.11	0.03		0.31		0.23	0.66			0.82	0.04

Intersection Summary
Cycle Length: 84
Actuated Cycle Length: 65.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 42: Pond Street & Hollis Street/Derby Street

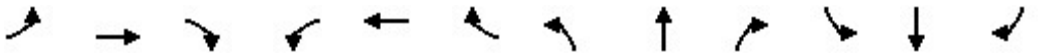




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	33	51	18	43	36	134	373	32	12	156	18
Future Volume (vph)	25	33	51	18	43	36	134	373	32	12	156	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	13	13	13	12	12	12	11	11	11
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85		0.95		1.00	0.99			1.00	0.85
Flt Protected		0.98	1.00		0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		1973	1794		1832		1787	1839			950	1531
Flt Permitted		0.98	1.00		0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)		1973	1794		1832		1787	1839			950	1531
Peak-hour factor, PHF	0.83	0.83	0.83	0.87	0.87	0.87	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	30	40	61	21	49	41	146	405	35	14	177	20
RTOR Reduction (vph)	0	0	0	0	26	0	0	3	0	0	0	15
Lane Group Flow (vph)	0	70	61	0	85	0	146	437	0	0	191	5
Heavy Vehicles (%)	4%	9%	2%	0%	2%	0%	1%	2%	3%	0%	100%	2%
Turn Type	Split	NA	Free	Split	NA		Split	NA		Split	NA	Prot
Protected Phases	6	6		2	2		8	8		4	4	4
Permitted Phases			Free									
Actuated Green, G (s)		6.2	67.4		6.4		19.7	19.7			15.1	15.1
Effective Green, g (s)		7.2	67.4		7.4		20.7	20.7			16.1	16.1
Actuated g/C Ratio		0.11	1.00		0.11		0.31	0.31			0.24	0.24
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		210	1794		201		548	564			226	365
v/s Ratio Prot		c0.04			c0.05		0.08	c0.24			c0.20	0.00
v/s Ratio Perm			0.03									
v/c Ratio		0.33	0.03		0.42		0.27	0.77			0.85	0.01
Uniform Delay, d1		27.9	0.0		28.0		17.6	21.2			24.5	19.6
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		0.9	0.0		1.4		0.3	6.6			24.0	0.0
Delay (s)		28.8	0.0		29.5		17.9	27.8			48.5	19.6
Level of Service		C	A		C		B	C			D	B
Approach Delay (s)		15.4			29.5			25.3			45.8	
Approach LOS		B			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	19.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



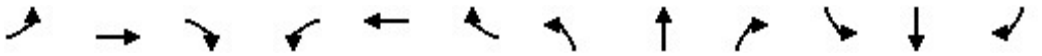
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	59	206	31	49	27	91	249	18	8	414	18
Future Volume (vph)	23	59	206	31	49	27	91	249	18	8	414	18
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.966			0.990				0.850
Flt Protected		0.986			0.986		0.950				0.999	
Satd. Flow (prot)	0	2123	1830	0	1870	0	1805	1881	0	0	1835	1561
Flt Permitted		0.986			0.986		0.950				0.999	
Satd. Flow (perm)	0	2123	1830	0	1870	0	1805	1881	0	0	1835	1561
Satd. Flow (RTOR)			264		17			4				156
Adj. Flow (vph)	29	76	264	41	64	36	103	283	20	9	440	19
Lane Group Flow (vph)	0	105	264	0	141	0	103	303	0	0	449	19
Turn Type	Split	NA	Free	Split	NA		Split	NA		Split	NA	Prot
Protected Phases	6	6		2	2		8	8		4	4	4
Permitted Phases			Free									
Detector Phase	6	6		2	2		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	10.0
Total Split (s)	24.0	24.0		15.0	15.0		26.0	26.0		19.0	19.0	19.0
Total Split (%)	28.6%	28.6%		17.9%	17.9%		31.0%	31.0%		22.6%	22.6%	22.6%
Maximum Green (s)	19.0	19.0		10.0	10.0		21.0	21.0		14.0	14.0	14.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None		None	None	None
v/c Ratio		0.31	0.14		0.44		0.21	0.60			0.93	0.04
Control Delay		30.2	0.2		30.6		22.0	27.8			60.3	0.1
Queue Delay		0.0	0.0		0.0		0.0	0.0			0.0	0.0
Total Delay		30.2	0.2		30.6		22.0	27.8			60.3	0.1
Queue Length 50th (ft)		41	0		48		35	113			~224	0
Queue Length 95th (ft)		75	0		89		73	193			#447	0
Internal Link Dist (ft)		486			805			510			830	
Turn Bay Length (ft)							145					150
Base Capacity (vph)		742	1830		373		694	725			481	524
Starvation Cap Reductn		0	0		0		0	0			0	0
Spillback Cap Reductn		0	0		0		0	0			0	0
Storage Cap Reductn		0	0		0		0	0			0	0
Reduced v/c Ratio		0.14	0.14		0.38		0.15	0.42			0.93	0.04

Intersection Summary
Cycle Length: 84
Actuated Cycle Length: 63.1
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

~ 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: 42: Pond Street & Hollis Street/Derby Street

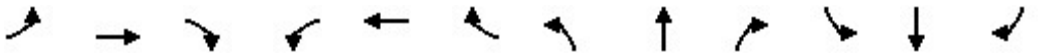




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	59	206	31	49	27	91	249	18	8	414	18
Future Volume (vph)	23	59	206	31	49	27	91	249	18	8	414	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	13	13	13	12	12	12	11	11	11
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85		0.97		1.00	0.99			1.00	0.85
Flt Protected		0.99	1.00		0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		2124	1830		1868		1805	1881			1835	1561
Flt Permitted		0.99	1.00		0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)		2124	1830		1868		1805	1881			1835	1561
Peak-hour factor, PHF	0.78	0.78	0.78	0.76	0.76	0.76	0.88	0.88	0.88	0.94	0.94	0.94
Adj. Flow (vph)	29	76	264	41	64	36	103	283	20	9	440	19
RTOR Reduction (vph)	0	0	0	0	15	0	0	3	0	0	0	14
Lane Group Flow (vph)	0	105	264	0	126	0	103	300	0	0	449	5
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Split	NA	Free	Split	NA		Split	NA		Split	NA	Prot
Protected Phases	6	6		2	2		8	8		4	4	4
Permitted Phases			Free									
Actuated Green, G (s)		6.8	64.8		6.8		15.8	15.8			15.4	15.4
Effective Green, g (s)		7.8	64.8		7.8		16.8	16.8			16.4	16.4
Actuated g/C Ratio		0.12	1.00		0.12		0.26	0.26			0.25	0.25
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		255	1830		224		467	487			464	395
v/s Ratio Prot		c0.05			c0.07		0.06	c0.16			c0.24	0.00
v/s Ratio Perm			0.14									
v/c Ratio		0.41	0.14		0.56		0.22	0.62			0.97	0.01
Uniform Delay, d1		26.4	0.0		26.9		18.9	21.2			23.9	18.1
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		1.1	0.2		3.2		0.2	2.3			33.1	0.0
Delay (s)		27.5	0.2		30.1		19.1	23.5			57.1	18.1
Level of Service		C	A		C		B	C			E	B
Approach Delay (s)		7.9			30.1			22.4			55.5	
Approach LOS		A			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	64.8	Sum of lost time (s)	19.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



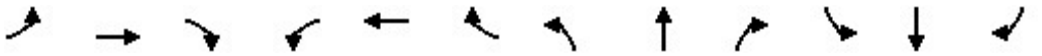
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	38	125	25	29	28	106	243	19	20	242	25
Future Volume (vph)	51	38	125	25	29	28	106	243	19	20	242	25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.954			0.989				0.850
Flt Protected		0.972			0.985		0.950				0.996	
Satd. Flow (prot)	0	2067	1812	0	1845	0	1805	1879	0	0	1822	1561
Flt Permitted		0.972			0.985		0.950				0.996	
Satd. Flow (perm)	0	2067	1812	0	1845	0	1805	1879	0	0	1822	1561
Satd. Flow (RTOR)			221		26			5				156
Adj. Flow (vph)	55	41	136	33	38	37	122	279	22	22	263	27
Lane Group Flow (vph)	0	96	136	0	108	0	122	301	0	0	285	27
Turn Type	Split	NA	Free	Split	NA		Split	NA		Split	NA	Prot
Protected Phases	6	6		2	2		8	8		4	4	4
Permitted Phases			Free									
Detector Phase	6	6		2	2		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	10.0
Total Split (s)	24.0	24.0		15.0	15.0		26.0	26.0		19.0	19.0	19.0
Total Split (%)	28.6%	28.6%		17.9%	17.9%		31.0%	31.0%		22.6%	22.6%	22.6%
Maximum Green (s)	19.0	19.0		10.0	10.0		21.0	21.0		14.0	14.0	14.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None		None	None	None
v/c Ratio		0.28	0.08		0.34		0.25	0.58			0.62	0.05
Control Delay		29.5	0.1		25.7		22.2	26.9			33.5	0.2
Queue Delay		0.0	0.0		0.0		0.0	0.0			0.0	0.0
Total Delay		29.5	0.1		25.7		22.2	26.9			33.5	0.2
Queue Length 50th (ft)		36	0		30		40	107			107	0
Queue Length 95th (ft)		82	0		65		82	188			#253	0
Internal Link Dist (ft)		486			805			510			830	
Turn Bay Length (ft)							145					150
Base Capacity (vph)		783	1812		404		752	785			517	555
Starvation Cap Reductn		0	0		0		0	0			0	0
Spillback Cap Reductn		0	0		0		0	0			0	0
Storage Cap Reductn		0	0		0		0	0			0	0
Reduced v/c Ratio		0.12	0.08		0.27		0.16	0.38			0.55	0.05

Intersection Summary
Cycle Length: 84
Actuated Cycle Length: 61.1
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 42: Pond Street & Hollis Street/Derby Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	38	125	25	29	28	106	243	19	20	242	25
Future Volume (vph)	51	38	125	25	29	28	106	243	19	20	242	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	13	13	13	12	12	12	11	11	11
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85		0.95		1.00	0.99			1.00	0.85
Flt Protected		0.97	1.00		0.98		0.95	1.00			1.00	1.00
Satd. Flow (prot)		2067	1812		1844		1805	1879			1823	1561
Flt Permitted		0.97	1.00		0.98		0.95	1.00			1.00	1.00
Satd. Flow (perm)		2067	1812		1844		1805	1879			1823	1561
Peak-hour factor, PHF	0.92	0.92	0.92	0.76	0.76	0.76	0.87	0.87	0.87	0.92	0.92	0.92
Adj. Flow (vph)	55	41	136	33	38	37	122	279	22	22	263	27
RTOR Reduction (vph)	0	0	0	0	23	0	0	4	0	0	0	20
Lane Group Flow (vph)	0	96	136	0	85	0	122	297	0	0	285	7
Heavy Vehicles (%)	0%	3%	1%	0%	0%	0%	0%	0%	0%	5%	0%	0%
Turn Type	Split	NA	Free	Split	NA		Split	NA		Split	NA	Prot
Protected Phases	6	6		2	2		8	8		4	4	4
Permitted Phases			Free									
Actuated Green, G (s)		6.6	62.5		6.2		15.5	15.5			14.2	14.2
Effective Green, g (s)		7.6	62.5		7.2		16.5	16.5			15.2	15.2
Actuated g/C Ratio		0.12	1.00		0.12		0.26	0.26			0.24	0.24
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		251	1812		212		476	496			443	379
v/s Ratio Prot		c0.05			c0.05		0.07	c0.16			c0.16	0.00
v/s Ratio Perm			0.08									
v/c Ratio		0.38	0.08		0.40		0.26	0.60			0.64	0.02
Uniform Delay, d1		25.3	0.0		25.6		18.2	20.1			21.2	18.0
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		1.0	0.1		1.2		0.3	2.0			3.2	0.0
Delay (s)		26.3	0.1		26.9		18.4	22.1			24.4	18.0
Level of Service		C	A		C		B	C			C	B
Approach Delay (s)		10.9			26.9			21.0			23.9	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	62.5	Sum of lost time (s)	19.0
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Route 18 at Pond Street and Pleasant Street



Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	937	390	0	487	109	230	407	12	252	194	30
Future Volume (vph)	0	937	390	0	487	109	230	407	12	252	194	30
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	0.91	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected							0.950	0.997		0.950	0.983	
Satd. Flow (prot)	0	3622	1436	0	3471	1531	1527	3234	1446	1527	3331	1382
Flt Permitted							0.950	0.997		0.950	0.983	
Satd. Flow (perm)	0	3622	1436	0	3471	1531	1527	3234	1446	1527	3331	1382
Satd. Flow (RTOR)			281			79			86			86
Adj. Flow (vph)	0	1065	443	0	601	135	247	438	13	274	211	33
Lane Group Flow (vph)	0	1065	443	0	601	135	222	463	13	159	326	33
Turn Type		NA	Perm		NA	Perm	Split	NA	Free	Split	NA	Free
Protected Phases		2			6		8	8		4	4	
Permitted Phases			2			6			Free			Free
Detector Phase		2	2		6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)		11.0	11.0		11.0	11.0	22.5	22.5		22.5	22.5	
Total Split (s)		67.0	67.0		67.0	67.0	25.0	25.0		36.0	36.0	
Total Split (%)		31.2%	31.2%		31.2%	31.2%	11.6%	11.6%		16.7%	16.7%	
Maximum Green (s)		61.0	61.0		61.0	61.0	19.0	19.0		30.0	30.0	
Yellow Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)		2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode		None	None		None	None	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.63	0.54		0.37	0.18	0.81	0.79	0.01	0.61	0.57	0.02
Control Delay		32.9	14.9		29.1	14.7	72.8	60.6	0.0	65.2	56.7	0.0
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		32.9	14.9		29.1	14.7	72.8	60.6	0.0	65.2	56.7	0.0
Queue Length 50th (ft)		260	60		125	19	160	166	0	110	112	0
Queue Length 95th (ft)		#926	352		402	104	#693	#626	0	347	309	0
Internal Link Dist (ft)		1330			1771			542			292	
Turn Bay Length (ft)			350			170	145		330	225		
Base Capacity (vph)		1961	906		1879	865	275	583	1446	419	915	1382
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		0.54	0.49		0.32	0.16	0.81	0.79	0.01	0.38	0.36	0.02

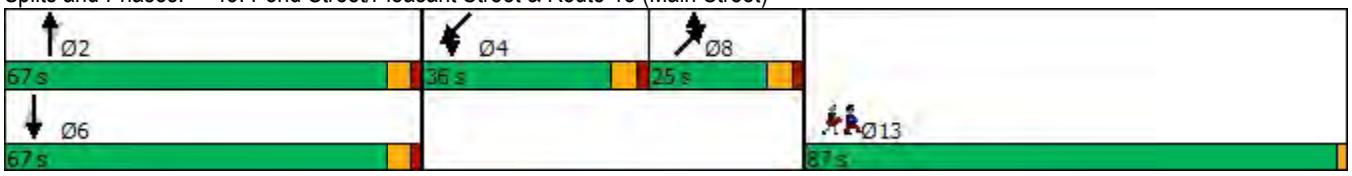
Intersection Summary
Cycle Length: 215

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	87.0
Total Split (s)	87.0
Total Split (%)	40%
Maximum Green (s)	85.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	80.0
Flash Dont Walk (s)	5.0
Pedestrian Calls (#/hr)	4
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 126.8
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 43: Pond Street/Pleasant Street & Route 18 (Main Street)



Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	937	390	0	487	109	230	407	12	252	194	30
Future Volume (vph)	0	937	390	0	487	109	230	407	12	252	194	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	10	12	12	11	11	11	11	11	12	11
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	1.00		0.95	1.00	0.91	0.91	1.00	0.91	0.91	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (prot)		3622	1436		3471	1531	1527	3235	1446	1527	3330	1382
Flt Permitted		1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (perm)		3622	1436		3471	1531	1527	3235	1446	1527	3330	1382
Peak-hour factor, PHF	0.88	0.88	0.88	0.81	0.81	0.81	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	0	1065	443	0	601	135	247	438	13	274	211	33
RTOR Reduction (vph)	0	0	151	0	0	42	0	0	0	0	0	0
Lane Group Flow (vph)	0	1065	292	0	601	93	222	463	13	159	326	33
Heavy Vehicles (%)	0%	3%	5%	0%	4%	2%	4%	3%	8%	4%	1%	13%
Turn Type		NA	Perm		NA	Perm	Split	NA	Free	Split	NA	Free
Protected Phases		2			6		8	8		4	4	
Permitted Phases			2			6			Free			Free
Actuated Green, G (s)		56.7	56.7		56.7	56.7	20.7	20.7	126.9	19.5	19.5	126.9
Effective Green, g (s)		58.7	58.7		58.7	58.7	22.7	22.7	126.9	21.5	21.5	126.9
Actuated g/C Ratio		0.46	0.46		0.46	0.46	0.18	0.18	1.00	0.17	0.17	1.00
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1675	664		1605	708	273	578	1446	258	564	1382
v/s Ratio Prot		c0.29			0.17		c0.15	0.14		c0.10	0.10	
v/s Ratio Perm			0.20			0.06			0.01			c0.02
v/c Ratio		0.64	0.44		0.37	0.13	0.81	0.80	0.01	0.62	0.58	0.02
Uniform Delay, d1		26.0	23.0		22.2	19.5	50.1	49.9	0.0	48.9	48.5	0.0
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.8	0.5		0.1	0.1	16.7	7.8	0.0	4.3	1.4	0.0
Delay (s)		26.8	23.5		22.3	19.6	66.7	57.8	0.0	53.2	50.0	0.0
Level of Service		C	C		C	B	E	E	A	D	D	A
Approach Delay (s)		25.8			21.8			59.5			47.8	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	35.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	126.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	687	349	0	917	218	143	340	45	435	408	65
Future Volume (vph)	0	687	349	0	917	218	143	340	45	435	408	65
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	0.91	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected							0.950	0.998		0.950	0.986	
Satd. Flow (prot)	0	3693	1507	0	3574	1546	1572	3335	1561	1572	3376	1516
Flt Permitted							0.950	0.998		0.950	0.986	
Satd. Flow (perm)	0	3693	1507	0	3574	1546	1572	3335	1561	1572	3376	1516
Satd. Flow (RTOR)			342			83			86			86
Adj. Flow (vph)	0	723	367	0	976	232	152	362	48	512	480	76
Lane Group Flow (vph)	0	723	367	0	976	232	137	377	48	323	669	76
Turn Type		NA	Perm		NA	Perm	Split	NA	Free	Split	NA	Free
Protected Phases		2			6		8	8		4	4	
Permitted Phases			2			6			Free			Free
Detector Phase		2	2		6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)		11.0	11.0		11.0	11.0	22.5	22.5		22.5	22.5	
Total Split (s)		67.0	67.0		67.0	67.0	25.0	25.0		36.0	36.0	
Total Split (%)		31.2%	31.2%		31.2%	31.2%	11.6%	11.6%		16.7%	16.7%	
Maximum Green (s)		61.0	61.0		61.0	61.0	19.0	19.0		30.0	30.0	
Yellow Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)		2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode		None	None		None	None	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.54	0.48		0.75	0.38	0.49	0.63	0.03	0.75	0.73	0.05
Control Delay		37.1	7.6		42.2	24.0	59.3	55.8	0.0	56.4	48.9	0.1
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		37.1	7.6		42.2	24.0	59.3	55.8	0.0	56.4	48.9	0.1
Queue Length 50th (ft)		194	10		290	68	92	131	0	217	222	0
Queue Length 95th (ft)		557	130		#838	272	#378	#473	0	#837	#750	0
Internal Link Dist (ft)		1330			1771			542			292	
Turn Bay Length (ft)			350			170	145		330	225		
Base Capacity (vph)		1980	966		1916	867	280	596	1561	428	919	1516
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		0.37	0.38		0.51	0.27	0.49	0.63	0.03	0.75	0.73	0.05

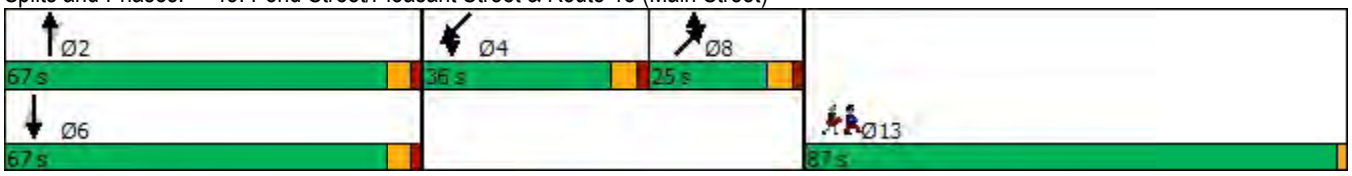
Intersection Summary
Cycle Length: 215

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	87.0
Total Split (s)	87.0
Total Split (%)	40%
Maximum Green (s)	85.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	80.0
Flash Dont Walk (s)	5.0
Pedestrian Calls (#/hr)	5
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 127.6
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 43: Pond Street/Pleasant Street & Route 18 (Main Street)





Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	687	349	0	917	218	143	340	45	435	408	65
Future Volume (vph)	0	687	349	0	917	218	143	340	45	435	408	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	10	12	12	11	11	11	11	11	12	11
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	1.00		0.95	1.00	0.91	0.91	1.00	0.91	0.91	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95	0.99	1.00
Satd. Flow (prot)		3693	1507		3574	1546	1572	3335	1561	1572	3376	1516
Flt Permitted		1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95	0.99	1.00
Satd. Flow (perm)		3693	1507		3574	1546	1572	3335	1561	1572	3376	1516
Peak-hour factor, PHF	0.95	0.95	0.95	0.94	0.94	0.94	0.94	0.94	0.94	0.85	0.85	0.85
Adj. Flow (vph)	0	723	367	0	976	232	152	362	48	512	480	76
RTOR Reduction (vph)	0	0	218	0	0	53	0	0	0	0	0	0
Lane Group Flow (vph)	0	723	149	0	976	179	137	377	48	323	669	76
Heavy Vehicles (%)	0%	1%	0%	0%	1%	1%	1%	0%	0%	1%	1%	3%
Turn Type		NA	Perm		NA	Perm	Split	NA	Free	Split	NA	Free
Protected Phases		2			6		8	8		4	4	
Permitted Phases			2			6			Free			Free
Actuated Green, G (s)		44.5	44.5		44.5	44.5	20.6	20.6	127.8	32.6	32.6	127.8
Effective Green, g (s)		46.5	46.5		46.5	46.5	22.6	22.6	127.8	34.6	34.6	127.8
Actuated g/C Ratio		0.36	0.36		0.36	0.36	0.18	0.18	1.00	0.27	0.27	1.00
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1343	548		1300	562	277	589	1561	425	914	1516
v/s Ratio Prot		0.20			c0.27		0.09	c0.11		c0.21	0.20	
v/s Ratio Perm			0.10			0.12			0.03			c0.05
v/c Ratio		0.54	0.27		0.75	0.32	0.49	0.64	0.03	0.76	0.73	0.05
Uniform Delay, d1		32.2	28.7		35.6	29.3	47.4	48.8	0.0	42.8	42.4	0.0
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.4	0.3		2.5	0.3	1.4	2.4	0.0	7.8	3.1	0.1
Delay (s)		32.6	29.0		38.1	29.6	48.8	51.2	0.0	50.6	45.4	0.1
Level of Service		C	C		D	C	D	D	A	D	D	A
Approach Delay (s)		31.4			36.4			46.3			43.8	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	38.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	127.8	Sum of lost time (s)	14.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	804	326	0	843	135	167	299	39	327	262	42
Future Volume (vph)	0	804	326	0	843	135	167	299	39	327	262	42
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	0.91	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected							0.950	0.997		0.950	0.983	
Satd. Flow (prot)	0	3693	1492	0	3574	1546	1572	3331	1561	1572	3344	1531
Flt Permitted							0.950	0.997		0.950	0.983	
Satd. Flow (perm)	0	3693	1492	0	3574	1546	1572	3331	1561	1572	3344	1531
Satd. Flow (RTOR)			273			56			86			86
Adj. Flow (vph)	0	874	354	0	958	153	186	332	43	348	279	45
Lane Group Flow (vph)	0	874	354	0	958	153	167	351	43	205	422	45
Turn Type		NA	Perm		NA	Perm	Split	NA	Free	Split	NA	Free
Protected Phases		2			6		8	8		4	4	
Permitted Phases			2			6			Free			Free
Detector Phase		2	2		6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)		11.0	11.0		11.0	11.0	22.5	22.5		22.5	22.5	
Total Split (s)		67.0	67.0		67.0	67.0	25.0	25.0		36.0	36.0	
Total Split (%)		31.2%	31.2%		31.2%	31.2%	11.6%	11.6%		16.7%	16.7%	
Maximum Green (s)		61.0	61.0		61.0	61.0	19.0	19.0		30.0	30.0	
Yellow Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)		2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode		None	None		None	None	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.63	0.48		0.71	0.25	0.54	0.53	0.03	0.56	0.54	0.03
Control Delay		37.2	11.7		38.9	22.1	55.6	50.7	0.0	52.8	48.5	0.0
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		37.2	11.7		38.9	22.1	55.6	50.7	0.0	52.8	48.5	0.0
Queue Length 50th (ft)		222	32		254	38	103	108	0	120	124	0
Queue Length 95th (ft)		698	213		768	175	#490	#429	0	#496	#410	0
Internal Link Dist (ft)		1330			1771			542			292	
Turn Bay Length (ft)			350			170	145		330	225		
Base Capacity (vph)		2188	995		2118	939	310	658	1561	473	1006	1531
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		0.40	0.36		0.45	0.16	0.54	0.53	0.03	0.43	0.42	0.03

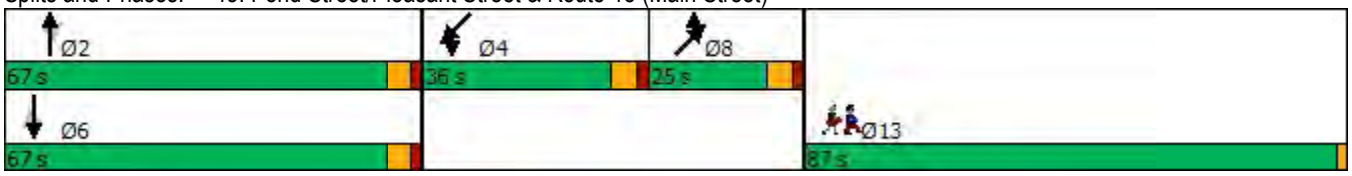
Intersection Summary
Cycle Length: 215

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	87.0
Total Split (s)	87.0
Total Split (%)	40%
Maximum Green (s)	85.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	80.0
Flash Dont Walk (s)	5.0
Pedestrian Calls (#/hr)	9
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 119.2
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 43: Pond Street/Pleasant Street & Route 18 (Main Street)



Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	804	326	0	843	135	167	299	39	327	262	42
Future Volume (vph)	0	804	326	0	843	135	167	299	39	327	262	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	13	10	12	12	11	11	11	11	11	12	11
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	1.00		0.95	1.00	0.91	0.91	1.00	0.91	0.91	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (prot)		3693	1492		3574	1546	1572	3332	1561	1572	3345	1531
Flt Permitted		1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (perm)		3693	1492		3574	1546	1572	3332	1561	1572	3345	1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.90	0.90	0.90	0.94	0.94	0.94
Adj. Flow (vph)	0	874	354	0	958	153	186	332	43	348	279	45
RTOR Reduction (vph)	0	0	170	0	0	35	0	0	0	0	0	0
Lane Group Flow (vph)	0	874	184	0	958	118	167	351	43	205	422	45
Heavy Vehicles (%)	0%	1%	1%	0%	1%	1%	1%	0%	0%	1%	2%	2%
Turn Type		NA	Perm		NA	Perm	Split	NA	Free	Split	NA	Free
Protected Phases		2			6		8	8		4	4	
Permitted Phases			2			6			Free			Free
Actuated Green, G (s)		42.6	42.6		42.6	42.6	21.3	21.3	118.7	25.4	25.4	118.7
Effective Green, g (s)		44.6	44.6		44.6	44.6	23.3	23.3	118.7	27.4	27.4	118.7
Actuated g/C Ratio		0.38	0.38		0.38	0.38	0.20	0.20	1.00	0.23	0.23	1.00
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1387	560		1342	580	308	654	1561	362	772	1531
v/s Ratio Prot		0.24			c0.27		c0.11	0.11		c0.13	0.13	
v/s Ratio Perm			0.12			0.08			0.03			c0.03
v/c Ratio		0.63	0.33		0.71	0.20	0.54	0.54	0.03	0.57	0.55	0.03
Uniform Delay, d1		30.3	26.4		31.6	25.0	42.9	42.9	0.0	40.4	40.2	0.0
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.9	0.3		1.8	0.2	1.9	0.9	0.0	2.0	0.8	0.0
Delay (s)		31.2	26.7		33.4	25.2	44.9	43.7	0.0	42.4	41.0	0.0
Level of Service		C	C		C	C	D	D	A	D	D	A
Approach Delay (s)		29.9			32.3			40.7			38.7	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	34.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	118.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Route 18 at Derby Street

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	1	43	0	0	2	61	1262	13	5	675	25
Future Vol, veh/h	4	1	43	0	0	2	61	1262	13	5	675	25
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	71	71	71	50	50	50	97	97	97	87	87	87
Heavy Vehicles, %	0	0	5	0	0	0	2	5	0	0	5	4
Mvmt Flow	6	1	61	0	0	4	63	1301	13	6	776	29

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1580	2243	403	1835	2251	657	805	0	0	1314	0	0
Stage 1	803	803	-	1434	1434	-	-	-	-	-	-	-
Stage 2	777	1440	-	401	817	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7	7.5	6.5	6.9	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.35	3.5	4	3.3	2.22	-	-	2.2	-	-
Pot Cap-1 Maneuver	75	43	589	48	42	412	815	-	-	533	-	-
Stage 1	348	399	-	143	201	-	-	-	-	-	-	-
Stage 2	360	200	-	602	393	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	57	30	589	32	29	412	815	-	-	533	-	-
Mov Cap-2 Maneuver	57	30	-	32	29	-	-	-	-	-	-	-
Stage 1	248	391	-	102	143	-	-	-	-	-	-	-
Stage 2	254	142	-	527	385	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.6	13.8	1.7	0.2
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	815	-	-	272	412	533	-	-
HCM Lane V/C Ratio	0.077	-	-	0.249	0.01	0.011	-	-
HCM Control Delay (s)	9.8	1.3	-	22.6	13.8	11.8	0.1	-
HCM Lane LOS	A	A	-	C	B	B	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1	0	0	-	-

Intersection	
Int Delay, s/veh	14.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	22	1	68	1	0	0	40	1036	8	9	1209	65
Future Vol, veh/h	22	1	68	1	0	0	40	1036	8	9	1209	65
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	73	73	73	25	25	25	91	91	91	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	30	1	93	4	0	0	44	1138	9	9	1273	68

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1982	2560	671	1886	2590	574	1341	0	0	1147	0	0
Stage 1	1325	1325	-	1231	1231	-	-	-	-	-	-	-
Stage 2	657	1235	-	655	1359	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	37	27	404	44	26	467	521	-	-	616	-	-
Stage 1	167	227	-	191	252	-	-	-	-	-	-	-
Stage 2	425	251	-	426	219	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 29	19	404	25	19	467	521	-	-	616	-	-
Mov Cap-2 Maneuver	~ 29	19	-	25	19	-	-	-	-	-	-	-
Stage 1	128	214	-	146	193	-	-	-	-	-	-	-
Stage 2	326	192	-	306	206	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	291.2	174.7	1.8	0.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	521	-	-	93	25	616	-	-
HCM Lane V/C Ratio	0.084	-	-	1.34	0.16	0.015	-	-
HCM Control Delay (s)	12.5	1.4	-	291.2	174.7	10.9	0.3	-
HCM Lane LOS	B	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0.3	-	-	9.1	0.5	0	-	-

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

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	1	49	0	1	3	29	1075	22	19	1053	52
Future Vol, veh/h	16	1	49	0	1	3	29	1075	22	19	1053	52
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	66	66	66	33	33	33	88	88	88	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	24	2	74	0	3	9	33	1222	25	20	1120	55

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1867	2501	588	1902	2516	624	1175	0	0	1247	0	0
Stage 1	1188	1188	-	1301	1301	-	-	-	-	-	-	-
Stage 2	679	1313	-	601	1215	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	46	29	457	43	29	433	602	-	-	565	-	-
Stage 1	203	264	-	173	233	-	-	-	-	-	-	-
Stage 2	412	230	-	459	256	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	32	21	457	27	21	433	602	-	-	565	-	-
Mov Cap-2 Maneuver	32	21	-	27	21	-	-	-	-	-	-	-
Stage 1	166	237	-	142	191	-	-	-	-	-	-	-
Stage 2	325	189	-	342	229	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	164.5	63.9	1.2	0.8
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	602	-	-	101	73	565	-	-
HCM Lane V/C Ratio	0.055	-	-	0.99	0.166	0.036	-	-
HCM Control Delay (s)	11.3	1	-	164.5	63.9	11.6	0.6	-
HCM Lane LOS	B	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0.2	-	-	6.1	0.6	0.1	-	-

Route 18 at Shea Memorial Drive

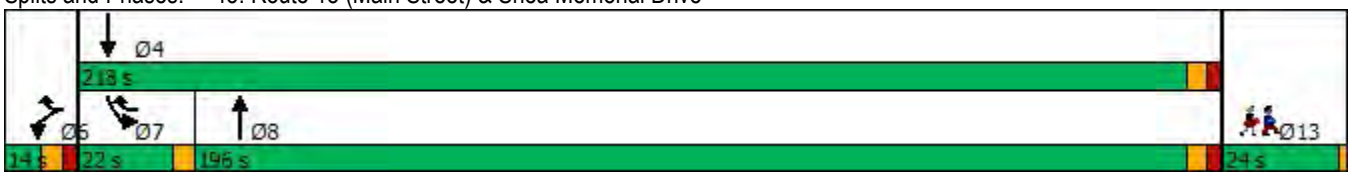


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø13
Lane Configurations							
Traffic Volume (vph)	4	123	1144	5	39	647	
Future Volume (vph)	4	123	1144	5	39	647	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95	
Frt		0.850	0.999				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1805	1553	3779	0	1662	3438	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1805	1553	3779	0	1662	3438	
Satd. Flow (RTOR)		156					
Adj. Flow (vph)	5	156	1179	5	43	719	
Lane Group Flow (vph)	5	156	1184	0	43	719	
Turn Type	Prot	pt+ov	NA		Prot	NA	
Protected Phases	6	6 7	8		7	4	13
Permitted Phases							
Detector Phase	6	6 7	8		7	4	
Switch Phase							
Minimum Initial (s)	1.0		5.0		5.0	5.0	5.0
Minimum Split (s)	11.0		34.0		11.0	22.5	24.0
Total Split (s)	14.0		196.0		22.0	218.0	24.0
Total Split (%)	5.5%		76.6%		8.6%	85.2%	9%
Maximum Green (s)	7.0		189.0		18.0	211.0	22.0
Yellow Time (s)	4.0		4.0		4.0	4.0	2.0
All-Red Time (s)	3.0		3.0		0.0	3.0	0.0
Lost Time Adjust (s)	-3.0		-3.0		0.0	-3.0	
Total Lost Time (s)	4.0		4.0		4.0	4.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0		3.0	3.0	3.0
Recall Mode	None		Min		None	Min	None
Walk Time (s)			4.0				7.0
Flash Dont Walk (s)			23.0				15.0
Pedestrian Calls (#/hr)			1				2
v/c Ratio	0.02	0.29	0.62		0.22	0.30	
Control Delay	35.0	7.2	14.6		36.3	5.5	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	35.0	7.2	14.6		36.3	5.5	
Queue Length 50th (ft)	2	0	138		14	35	
Queue Length 95th (ft)	14	35	389		65	154	
Internal Link Dist (ft)	2219		4110			1013	
Turn Bay Length (ft)		580			245		
Base Capacity (vph)	287	663	3779		476	3438	
Starvation Cap Reductn	0	0	0		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.02	0.24	0.31		0.09	0.21	

Intersection Summary
Cycle Length: 256

Actuated Cycle Length: 67.4
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 45: Route 18 (Main Street) & Shea Memorial Drive





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	123	1144	5	39	647
Future Volume (vph)	4	123	1144	5	39	647
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	11	11	12
Total Lost time (s)	4.0	7.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	1553	3780		1662	3438
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1805	1553	3780		1662	3438
Peak-hour factor, PHF	0.79	0.79	0.97	0.97	0.90	0.90
Adj. Flow (vph)	5	156	1179	5	43	719
RTOR Reduction (vph)	0	107	0	0	0	0
Lane Group Flow (vph)	5	49	1184	0	43	719
Heavy Vehicles (%)	0%	4%	5%	0%	5%	5%
Turn Type	Prot	pt+ov	NA		Prot	NA
Protected Phases	6	6 7	8		7	4
Permitted Phases						
Actuated Green, G (s)	6.4	21.2	31.2		7.8	43.0
Effective Green, g (s)	9.4	21.2	34.2		7.8	46.0
Actuated g/C Ratio	0.14	0.31	0.50		0.11	0.68
Clearance Time (s)	7.0		7.0		4.0	7.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	249	483	1898		190	2322
v/s Ratio Prot	0.00	c0.03	c0.31		0.03	c0.21
v/s Ratio Perm						
v/c Ratio	0.02	0.10	0.62		0.23	0.31
Uniform Delay, d1	25.4	16.7	12.3		27.4	4.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.1	0.6		0.6	0.1
Delay (s)	25.4	16.8	12.9		28.0	4.6
Level of Service	C	B	B		C	A
Approach Delay (s)	17.0		12.9			5.9
Approach LOS	B		B			A

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	68.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

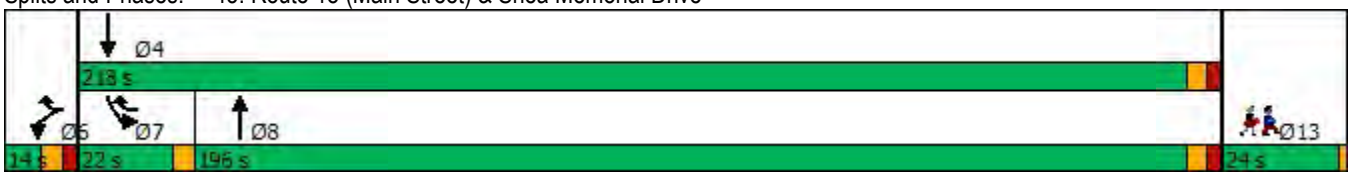


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø13
Lane Configurations							
Traffic Volume (vph)	9	101	928	8	75	1141	
Future Volume (vph)	9	101	928	8	75	1141	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95	
Frt		0.850	0.999				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1626	1615	3933	0	1711	3574	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1626	1615	3933	0	1711	3574	
Satd. Flow (RTOR)		125	1				
Adj. Flow (vph)	11	125	1031	9	84	1282	
Lane Group Flow (vph)	11	125	1040	0	84	1282	
Turn Type	Prot	pt+ov	NA		Prot	NA	
Protected Phases	6	6 7	8		7	4	13
Permitted Phases							
Detector Phase	6	6 7	8		7	4	
Switch Phase							
Minimum Initial (s)	1.0		5.0		5.0	5.0	5.0
Minimum Split (s)	11.0		34.0		11.0	22.5	24.0
Total Split (s)	14.0		196.0		22.0	218.0	24.0
Total Split (%)	5.5%		76.6%		8.6%	85.2%	9%
Maximum Green (s)	7.0		189.0		18.0	211.0	22.0
Yellow Time (s)	4.0		4.0		4.0	4.0	2.0
All-Red Time (s)	3.0		3.0		0.0	3.0	0.0
Lost Time Adjust (s)	-3.0		-3.0		0.0	-3.0	
Total Lost Time (s)	4.0		4.0		4.0	4.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0		3.0	3.0	3.0
Recall Mode	None		Min		None	Min	None
Walk Time (s)			4.0				7.0
Flash Dont Walk (s)			23.0				15.0
Pedestrian Calls (#/hr)			1				2
v/c Ratio	0.05	0.22	0.56		0.34	0.53	
Control Delay	32.8	6.6	15.2		33.8	7.4	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	32.8	6.6	15.2		33.8	7.4	
Queue Length 50th (ft)	3	0	123		26	80	
Queue Length 95th (ft)	22	34	341		98	322	
Internal Link Dist (ft)	2219		4110			1013	
Turn Bay Length (ft)		580			245		
Base Capacity (vph)	263	675	3933		498	3574	
Starvation Cap Reductn	0	0	0		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.04	0.19	0.26		0.17	0.36	

Intersection Summary
Cycle Length: 256

Actuated Cycle Length: 65.7
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 45: Route 18 (Main Street) & Shea Memorial Drive





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	101	928	8	75	1141
Future Volume (vph)	9	101	928	8	75	1141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	11	11	12
Total Lost time (s)	4.0	7.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1626	1615	3932		1711	3574
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1626	1615	3932		1711	3574
Peak-hour factor, PHF	0.81	0.81	0.90	0.90	0.89	0.89
Adj. Flow (vph)	11	125	1031	9	84	1282
RTOR Reduction (vph)	0	82	1	0	0	0
Lane Group Flow (vph)	11	43	1039	0	84	1282
Heavy Vehicles (%)	11%	0%	0%	100%	2%	1%
Turn Type	Prot	pt+ov	NA		Prot	NA
Protected Phases	6	6 7	8		7	4
Permitted Phases						
Actuated Green, G (s)	6.3	22.8	27.9		9.5	41.4
Effective Green, g (s)	9.3	22.8	30.9		9.5	44.4
Actuated g/C Ratio	0.14	0.34	0.46		0.14	0.67
Clearance Time (s)	7.0		7.0		4.0	7.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	227	553	1827		244	2386
v/s Ratio Prot	0.01	c0.03	0.26		0.05	c0.36
v/s Ratio Perm						
v/c Ratio	0.05	0.08	0.57		0.34	0.54
Uniform Delay, d1	24.8	14.8	13.0		25.7	5.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.1	0.4		0.8	0.2
Delay (s)	24.9	14.8	13.4		26.5	6.0
Level of Service	C	B	B		C	A
Approach Delay (s)	15.6		13.4			7.2
Approach LOS	B		B			A

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	66.5	Sum of lost time (s)	17.0
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

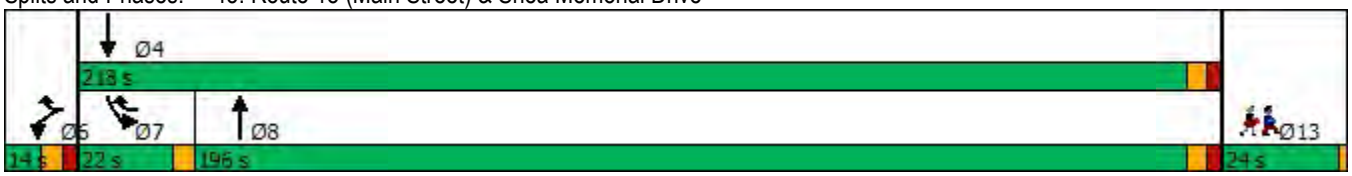


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø13
Lane Configurations							
Traffic Volume (vph)	13	95	923	5	99	1002	
Future Volume (vph)	13	95	923	5	99	1002	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95	
Frt		0.850	0.999				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1671	1615	3928	0	1745	3574	
Flt Permitted	0.950				0.950		
Satd. Flow (perm)	1671	1615	3928	0	1745	3574	
Satd. Flow (RTOR)		127	1				
Adj. Flow (vph)	17	127	1073	6	106	1077	
Lane Group Flow (vph)	17	127	1079	0	106	1077	
Turn Type	Prot	pt+ov	NA		Prot	NA	
Protected Phases	6	6 7	8		7	4	13
Permitted Phases							
Detector Phase	6	6 7	8		7	4	
Switch Phase							
Minimum Initial (s)	1.0		5.0		5.0	5.0	5.0
Minimum Split (s)	11.0		34.0		11.0	22.5	24.0
Total Split (s)	14.0		196.0		22.0	218.0	24.0
Total Split (%)	5.5%		76.6%		8.6%	85.2%	9%
Maximum Green (s)	7.0		189.0		18.0	211.0	22.0
Yellow Time (s)	4.0		4.0		4.0	4.0	2.0
All-Red Time (s)	3.0		3.0		0.0	3.0	0.0
Lost Time Adjust (s)	-3.0		-3.0		0.0	-3.0	
Total Lost Time (s)	4.0		4.0		4.0	4.0	
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0		3.0	3.0	3.0
Recall Mode	None		None		None	None	None
Walk Time (s)			4.0				7.0
Flash Dont Walk (s)			23.0				15.0
Pedestrian Calls (#/hr)			1				2
v/c Ratio	0.07	0.21	0.60		0.35	0.44	
Control Delay	34.5	6.3	16.7		33.6	6.4	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	34.5	6.3	16.7		33.6	6.4	
Queue Length 50th (ft)	6	0	145		35	63	
Queue Length 95th (ft)	28	26	344		123	254	
Internal Link Dist (ft)	2219		4110			1013	
Turn Bay Length (ft)		580			245		
Base Capacity (vph)	257	650	3928		483	3574	
Starvation Cap Reductn	0	0	0		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.07	0.20	0.27		0.22	0.30	

Intersection Summary
Cycle Length: 256

Actuated Cycle Length: 68.9
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 45: Route 18 (Main Street) & Shea Memorial Drive





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	13	95	923	5	99	1002
Future Volume (vph)	13	95	923	5	99	1002
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	15	11	11	12
Total Lost time (s)	4.0	7.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1671	1615	3929		1745	3574
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1671	1615	3929		1745	3574
Peak-hour factor, PHF	0.75	0.75	0.86	0.86	0.93	0.93
Adj. Flow (vph)	17	127	1073	6	106	1077
RTOR Reduction (vph)	0	81	1	0	0	0
Lane Group Flow (vph)	17	46	1078	0	106	1077
Heavy Vehicles (%)	8%	0%	1%	0%	0%	1%
Turn Type	Prot	pt+ov	NA		Prot	NA
Protected Phases	6	6 7	8		7	4
Permitted Phases						
Actuated Green, G (s)	6.5	25.3	28.6		11.8	44.4
Effective Green, g (s)	9.5	25.3	31.6		11.8	47.4
Actuated g/C Ratio	0.14	0.36	0.45		0.17	0.68
Clearance Time (s)	7.0		7.0		4.0	7.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	227	585	1778		295	2427
v/s Ratio Prot	0.01	c0.03	c0.27		0.06	c0.30
v/s Ratio Perm						
v/c Ratio	0.07	0.08	0.61		0.36	0.44
Uniform Delay, d1	26.3	14.6	14.4		25.7	5.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.1	0.6		0.8	0.1
Delay (s)	26.5	14.7	15.0		26.4	5.3
Level of Service	C	B	B		C	A
Approach Delay (s)	16.1		15.0			7.2
Approach LOS	B		B			A

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	69.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Shea Memorial Drive at Memorial Grove Avenue

Intersection	
Int Delay, s/veh	6.7

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	127	0	0	44	0	0
Future Vol, veh/h	127	0	0	44	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	73	73	25	25
Heavy Vehicles, %	4	0	0	5	0	0
Mvmt Flow	157	0	0	60	0	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	34	30	0	0	60	0
Stage 1	30	-	-	-	-	-
Stage 2	4	-	-	-	-	-
Critical Hdwy	6.44	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	974	1050	-	-	1556	-
Stage 1	987	-	-	-	-	-
Stage 2	1014	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	974	1050	-	-	1556	-
Mov Cap-2 Maneuver	974	-	-	-	-	-
Stage 1	987	-	-	-	-	-
Stage 2	1014	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	974	1556	-
HCM Lane V/C Ratio	-	-	0.161	-	-
HCM Control Delay (s)	-	-	9.4	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0	-

Intersection	
Int Delay, s/veh	5.6

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	110	0	0	83	0	0
Future Vol, veh/h	110	0	0	83	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	90	90	25	25
Heavy Vehicles, %	2	0	0	0	0	0
Mvmt Flow	143	0	0	92	0	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	50	46	0	0	92	0
Stage 1	46	-	-	-	-	-
Stage 2	4	-	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	959	1029	-	-	1515	-
Stage 1	976	-	-	-	-	-
Stage 2	1019	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	959	1029	-	-	1515	-
Mov Cap-2 Maneuver	959	-	-	-	-	-
Stage 1	976	-	-	-	-	-
Stage 2	1019	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	959	1515	-
HCM Lane V/C Ratio	-	-	0.149	-	-
HCM Control Delay (s)	-	-	9.4	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	5.1

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	108	0	0	104	0	0
Future Vol, veh/h	108	0	0	104	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	90	90	25	25
Heavy Vehicles, %	3	0	0	0	0	0
Mvmt Flow	140	0	0	116	0	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	62	58	0	0	116	0
Stage 1	58	-	-	-	-	-
Stage 2	4	-	-	-	-	-
Critical Hdwy	6.43	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	942	1014	-	-	1485	-
Stage 1	962	-	-	-	-	-
Stage 2	1017	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	942	1014	-	-	1485	-
Mov Cap-2 Maneuver	942	-	-	-	-	-
Stage 1	962	-	-	-	-	-
Stage 2	1017	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	9.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	942	1485	-
HCM Lane V/C Ratio	-	-	0.149	-	-
HCM Control Delay (s)	-	-	9.5	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Union Street at White Street

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	179	11	1	261	20	1
Future Vol, veh/h	179	11	1	261	20	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	94	94	66	66
Heavy Vehicles, %	1	0	0	5	0	0
Mvmt Flow	203	13	1	278	30	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	216	0	490	210
Stage 1	-	-	-	-	210	-
Stage 2	-	-	-	-	280	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1366	-	541	835
Stage 1	-	-	-	-	830	-
Stage 2	-	-	-	-	772	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1366	-	540	835
Mov Cap-2 Maneuver	-	-	-	-	540	-
Stage 1	-	-	-	-	830	-
Stage 2	-	-	-	-	771	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	549	-	-	1366	-
HCM Lane V/C Ratio	0.058	-	-	0.001	-
HCM Control Delay (s)	12	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	314	21	4	303	15	4
Future Vol, veh/h	314	21	4	303	15	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	90	90	68	68
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	365	24	4	337	22	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	389	0	722	377
Stage 1	-	-	-	-	377	-
Stage 2	-	-	-	-	345	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1181	-	397	674
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	722	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1181	-	395	674
Mov Cap-2 Maneuver	-	-	-	-	395	-
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	719	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	433	-	-	1181	-
HCM Lane V/C Ratio	0.065	-	-	0.004	-
HCM Control Delay (s)	13.9	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	309	25	8	240	18	8
Future Vol, veh/h	309	25	8	240	18	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	87	87	81	81
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	336	27	9	276	22	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	363	0	644	350
Stage 1	-	-	-	-	350	-
Stage 2	-	-	-	-	294	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1207	-	440	698
Stage 1	-	-	-	-	718	-
Stage 2	-	-	-	-	761	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1207	-	436	698
Mov Cap-2 Maneuver	-	-	-	-	436	-
Stage 1	-	-	-	-	718	-
Stage 2	-	-	-	-	754	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	493	-	-	1207	-
HCM Lane V/C Ratio	0.065	-	-	0.008	-
HCM Control Delay (s)	12.8	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Pond Street at Thicket Street

Intersection	
Int Delay, s/veh	15.4

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	123	93	40	220	249	95
Future Vol, veh/h	123	93	40	220	249	95
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	86	86	80	80
Heavy Vehicles, %	0	2	5	4	1	3
Mvmt Flow	158	119	47	256	311	119

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	277	0	568	218
Stage 1	-	-	-	-	218	-
Stage 2	-	-	-	-	350	-
Critical Hdwy	-	-	4.15	-	6.41	6.23
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.245	-	3.509	3.327
Pot Cap-1 Maneuver	-	-	1269	-	486	819
Stage 1	-	-	-	-	821	-
Stage 2	-	-	-	-	716	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1269	-	465	819
Mov Cap-2 Maneuver	-	-	-	-	465	-
Stage 1	-	-	-	-	821	-
Stage 2	-	-	-	-	685	-

Approach	SE	NW	NE
HCM Control Delay, s	0	1.2	35.2
HCM LOS			E

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	528	1269	-	-	-
HCM Lane V/C Ratio	0.814	0.037	-	-	-
HCM Control Delay (s)	35.2	7.9	0	-	-
HCM Lane LOS	E	A	A	-	-
HCM 95th %tile Q(veh)	8	0.1	-	-	-

Intersection	
Int Delay, s/veh	5.9

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	262	265	15	154	165	77
Future Vol, veh/h	262	265	15	154	165	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	89	89	89	89
Heavy Vehicles, %	0	0	2	0	2	1
Mvmt Flow	285	288	17	173	185	87

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	573	0	636	429
Stage 1	-	-	-	-	429	-
Stage 2	-	-	-	-	207	-
Critical Hdwy	-	-	4.12	-	6.42	6.21
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.309
Pot Cap-1 Maneuver	-	-	1000	-	442	628
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	828	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1000	-	434	628
Mov Cap-2 Maneuver	-	-	-	-	434	-
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	812	-

Approach	SE	NW	NE
HCM Control Delay, s	0	0.8	21.8
HCM LOS			C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	481	1000	-	-	-
HCM Lane V/C Ratio	0.565	0.017	-	-	-
HCM Control Delay (s)	21.8	8.7	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	3.4	0.1	-	-	-

Intersection	
Int Delay, s/veh	6.3

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	185	126	87	183	127	57
Future Vol, veh/h	185	126	87	183	127	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	88	88	82	82
Heavy Vehicles, %	1	1	0	1	1	4
Mvmt Flow	218	148	99	208	155	70

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	366	0	698	292
Stage 1	-	-	-	-	292	-
Stage 2	-	-	-	-	406	-
Critical Hdwy	-	-	4.1	-	6.41	6.24
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.2	-	3.509	3.336
Pot Cap-1 Maneuver	-	-	1204	-	408	743
Stage 1	-	-	-	-	760	-
Stage 2	-	-	-	-	675	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1204	-	370	743
Mov Cap-2 Maneuver	-	-	-	-	370	-
Stage 1	-	-	-	-	760	-
Stage 2	-	-	-	-	612	-

Approach	SE	NW	NE
HCM Control Delay, s	0	2.7	21.5
HCM LOS			C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	438	1204	-	-	-
HCM Lane V/C Ratio	0.512	0.082	-	-	-
HCM Control Delay (s)	21.5	8.3	0	-	-
HCM Lane LOS	C	A	A	-	-
HCM 95th %tile Q(veh)	2.8	0.3	-	-	-

Route 18 at Trotter Pond

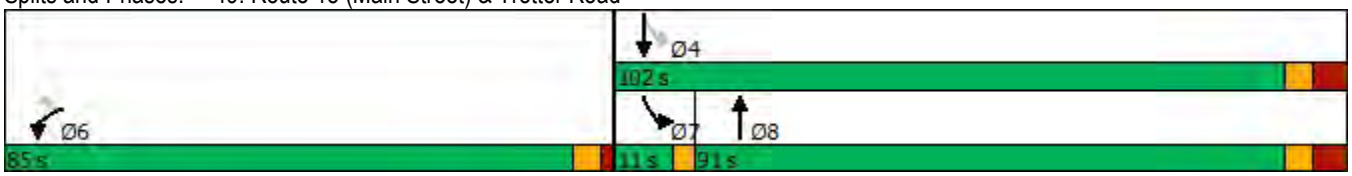


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	74	117	1066	144	85	551
Future Volume (vph)	74	117	1066	144	85	551
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.982			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1560	1492	3416	0	1604	3438
Flt Permitted	0.950				0.112	
Satd. Flow (perm)	1560	1492	3416	0	189	3438
Satd. Flow (RTOR)		130	11			
Adj. Flow (vph)	95	150	1171	158	105	680
Lane Group Flow (vph)	95	150	1329	0	105	680
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	6		8		7	4
Permitted Phases		6			4	
Detector Phase	6	6	8		7	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	83.0	83.0	83.0		8.0	22.5
Total Split (s)	85.0	85.0	91.0		11.0	102.0
Total Split (%)	45.5%	45.5%	48.7%		5.9%	54.5%
Maximum Green (s)	79.0	79.0	82.0		8.0	93.0
Yellow Time (s)	4.0	4.0	4.0		3.0	4.0
All-Red Time (s)	2.0	2.0	5.0		0.0	5.0
Lost Time Adjust (s)	-2.0	-2.0	-5.0		0.0	-5.0
Total Lost Time (s)	4.0	4.0	4.0		3.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		None	None
Walk Time (s)	4.0	4.0	60.0			
Flash Dont Walk (s)	12.0	12.0	14.0			
Pedestrian Calls (#/hr)	3	3	4			
v/c Ratio	0.34	0.40	0.67		0.37	0.28
Control Delay	37.4	13.0	13.3		7.0	4.3
Queue Delay	0.0	0.0	0.1		0.0	0.0
Total Delay	37.4	13.0	13.4		7.0	4.3
Queue Length 50th (ft)	39	8	215		12	51
Queue Length 95th (ft)	101	50	310		25	73
Internal Link Dist (ft)	198		263			4110
Turn Bay Length (ft)	115				100	
Base Capacity (vph)	1456	1401	3240		284	3325
Starvation Cap Reductn	0	0	691		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.07	0.11	0.52		0.37	0.20

Intersection Summary
Cycle Length: 187

Actuated Cycle Length: 81.3
Natural Cycle: 175
Control Type: Actuated-Uncoordinated

Splits and Phases: 49: Route 18 (Main Street) & Trotter Road





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	74	117	1066	144	85	551
Future Volume (vph)	74	117	1066	144	85	551
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	10	12
Total Lost time (s)	4.0	4.0	4.0		3.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1560	1492	3417		1604	3438
Flt Permitted	0.95	1.00	1.00		0.11	1.00
Satd. Flow (perm)	1560	1492	3417		189	3438
Peak-hour factor, PHF	0.78	0.78	0.91	0.91	0.81	0.81
Adj. Flow (vph)	95	150	1171	158	105	680
RTOR Reduction (vph)	0	107	5	0	0	0
Lane Group Flow (vph)	95	43	1324	0	105	680
Heavy Vehicles (%)	8%	1%	4%	2%	5%	5%
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	6		8		7	4
Permitted Phases		6			4	
Actuated Green, G (s)	12.4	12.4	41.7		53.1	53.1
Effective Green, g (s)	14.4	14.4	46.7		53.1	58.1
Actuated g/C Ratio	0.18	0.18	0.58		0.66	0.72
Clearance Time (s)	6.0	6.0	9.0		3.0	9.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	279	266	1982		272	2481
v/s Ratio Prot	c0.06		c0.39		c0.04	0.20
v/s Ratio Perm		0.03			0.21	
v/c Ratio	0.34	0.16	0.67		0.39	0.27
Uniform Delay, d1	28.9	28.0	11.6		8.7	3.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.3	0.9		0.9	0.1
Delay (s)	29.6	28.2	12.5		9.6	3.9
Level of Service	C	C	B		A	A
Approach Delay (s)	28.8		12.5			4.7
Approach LOS	C		B			A

Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	80.5	Sum of lost time (s)	11.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

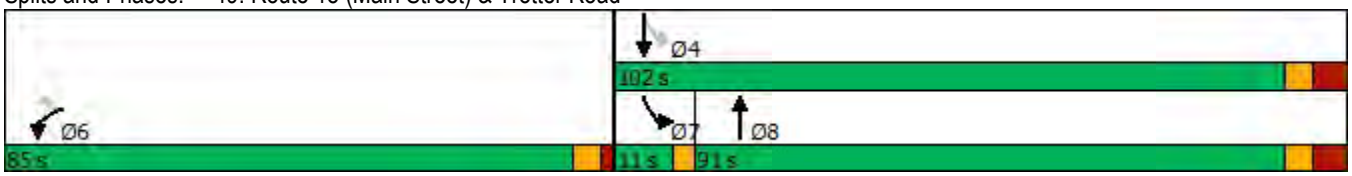


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	274	133	803	118	126	1021
Future Volume (vph)	274	133	803	118	126	1021
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.981			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1685	1507	3511	0	1685	3574
Flt Permitted	0.950				0.146	
Satd. Flow (perm)	1685	1507	3511	0	259	3574
Satd. Flow (RTOR)		173	12			
Adj. Flow (vph)	356	173	892	131	142	1147
Lane Group Flow (vph)	356	173	1023	0	142	1147
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	6		8		7	4
Permitted Phases		6			4	
Detector Phase	6	6	8		7	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	83.0	83.0	83.0		8.0	22.5
Total Split (s)	85.0	85.0	91.0		11.0	102.0
Total Split (%)	45.5%	45.5%	48.7%		5.9%	54.5%
Maximum Green (s)	79.0	79.0	82.0		8.0	93.0
Yellow Time (s)	4.0	4.0	4.0		3.0	4.0
All-Red Time (s)	2.0	2.0	5.0		0.0	5.0
Lost Time Adjust (s)	-2.0	-2.0	-5.0		0.0	-5.0
Total Lost Time (s)	4.0	4.0	4.0		3.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		None	None
Walk Time (s)	4.0	4.0	60.0			
Flash Dont Walk (s)	12.0	12.0	14.0			
Pedestrian Calls (#/hr)	2	2	2			
v/c Ratio	0.66	0.29	0.62		0.50	0.54
Control Delay	36.7	5.9	20.6		15.5	13.3
Queue Delay	0.0	0.0	0.1		0.0	0.0
Total Delay	36.7	5.9	20.7		15.5	13.3
Queue Length 50th (ft)	164	0	218		32	191
Queue Length 95th (ft)	328	28	369		80	346
Internal Link Dist (ft)	198		263			4110
Turn Bay Length (ft)	115				100	
Base Capacity (vph)	1453	1324	3150		283	3343
Starvation Cap Reductn	0	0	666		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.25	0.13	0.41		0.50	0.34

Intersection Summary
Cycle Length: 187

Actuated Cycle Length: 95.2
Natural Cycle: 175
Control Type: Actuated-Uncoordinated

Splits and Phases: 49: Route 18 (Main Street) & Trotter Road





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	274	133	803	118	126	1021
Future Volume (vph)	274	133	803	118	126	1021
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	10	12
Total Lost time (s)	4.0	4.0	4.0		3.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1685	1507	3510		1685	3574
Flt Permitted	0.95	1.00	1.00		0.15	1.00
Satd. Flow (perm)	1685	1507	3510		258	3574
Peak-hour factor, PHF	0.77	0.77	0.90	0.90	0.89	0.89
Adj. Flow (vph)	356	173	892	131	142	1147
RTOR Reduction (vph)	0	117	6	0	0	0
Lane Group Flow (vph)	356	56	1017	0	142	1147
Heavy Vehicles (%)	0%	0%	1%	0%	0%	1%
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	6		8		7	4
Permitted Phases		6			4	
Actuated Green, G (s)	28.4	28.4	39.3		50.8	50.8
Effective Green, g (s)	30.4	30.4	44.3		50.8	55.8
Actuated g/C Ratio	0.32	0.32	0.47		0.54	0.59
Clearance Time (s)	6.0	6.0	9.0		3.0	9.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	543	486	1650		267	2117
v/s Ratio Prot	c0.21		c0.29		0.05	c0.32
v/s Ratio Perm		0.04			0.24	
v/c Ratio	0.66	0.11	0.62		0.53	0.54
Uniform Delay, d1	27.4	22.4	18.6		14.0	11.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.9	0.1	0.7		2.0	0.3
Delay (s)	30.3	22.5	19.3		16.0	11.8
Level of Service	C	C	B		B	B
Approach Delay (s)	27.7		19.3			12.3
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	94.2	Sum of lost time (s)	11.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

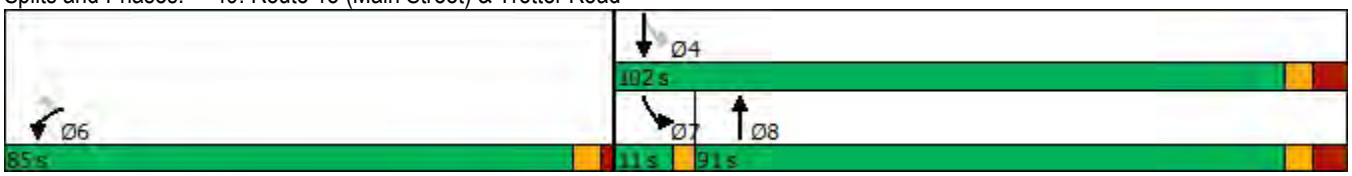


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	198	105	854	155	113	900
Future Volume (vph)	198	105	854	155	113	900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.977			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1668	1507	3492	0	1685	3574
Flt Permitted	0.950				0.139	
Satd. Flow (perm)	1668	1507	3492	0	246	3574
Satd. Flow (RTOR)		111	15			
Adj. Flow (vph)	208	111	949	172	145	1154
Lane Group Flow (vph)	208	111	1121	0	145	1154
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	6		8		7	4
Permitted Phases		6			4	
Detector Phase	6	6	8		7	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	83.0	83.0	83.0		8.0	22.5
Total Split (s)	85.0	85.0	91.0		11.0	102.0
Total Split (%)	45.5%	45.5%	48.7%		5.9%	54.5%
Maximum Green (s)	79.0	79.0	82.0		8.0	93.0
Yellow Time (s)	4.0	4.0	4.0		3.0	4.0
All-Red Time (s)	2.0	2.0	5.0		0.0	5.0
Lost Time Adjust (s)	-2.0	-2.0	-5.0		0.0	-5.0
Total Lost Time (s)	4.0	4.0	4.0		3.0	4.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		None	None
Walk Time (s)	4.0	4.0	60.0			
Flash Dont Walk (s)	12.0	12.0	14.0			
Pedestrian Calls (#/hr)	1	1	2			
v/c Ratio	0.51	0.24	0.62		0.47	0.50
Control Delay	35.2	8.4	15.7		10.6	8.4
Queue Delay	0.0	0.0	0.1		0.0	0.0
Total Delay	35.2	8.4	15.8		10.6	8.4
Queue Length 50th (ft)	84	0	195		23	137
Queue Length 95th (ft)	235	48	305		46	189
Internal Link Dist (ft)	198		263			4110
Turn Bay Length (ft)	115				100	
Base Capacity (vph)	1547	1405	3272		309	3410
Starvation Cap Reductn	0	0	678		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.13	0.08	0.43		0.47	0.34

Intersection Summary
Cycle Length: 187

Actuated Cycle Length: 83.9
Natural Cycle: 175
Control Type: Actuated-Uncoordinated

Splits and Phases: 49: Route 18 (Main Street) & Trotter Road





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	198	105	854	155	113	900
Future Volume (vph)	198	105	854	155	113	900
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	10	12
Total Lost time (s)	4.0	4.0	4.0		3.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1668	1507	3492		1685	3574
Flt Permitted	0.95	1.00	1.00		0.14	1.00
Satd. Flow (perm)	1668	1507	3492		246	3574
Peak-hour factor, PHF	0.95	0.95	0.90	0.90	0.78	0.78
Adj. Flow (vph)	208	111	949	172	145	1154
RTOR Reduction (vph)	0	83	7	0	0	0
Lane Group Flow (vph)	208	28	1114	0	145	1154
Heavy Vehicles (%)	1%	0%	1%	1%	0%	1%
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	6		8		7	4
Permitted Phases		6			4	
Actuated Green, G (s)	18.6	18.6	37.9		49.4	49.4
Effective Green, g (s)	20.6	20.6	42.9		49.4	54.4
Actuated g/C Ratio	0.25	0.25	0.52		0.60	0.66
Clearance Time (s)	6.0	6.0	9.0		3.0	9.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	413	374	1804		293	2342
v/s Ratio Prot	c0.12		c0.32		0.05	c0.32
v/s Ratio Perm		0.02			0.24	
v/c Ratio	0.50	0.07	0.62		0.49	0.49
Uniform Delay, d1	26.8	23.9	14.2		10.5	7.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.0	0.1	0.6		1.3	0.2
Delay (s)	27.8	24.0	14.9		11.8	7.4
Level of Service	C	C	B		B	A
Approach Delay (s)	26.5		14.9			7.9
Approach LOS	C		B			A

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	83.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

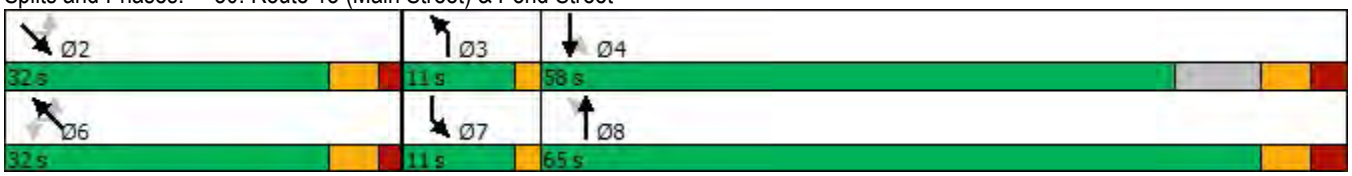
Route 18 at Pond Street (Route 58)

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	75	727	13	133	455	37	86	67	72	7	92	335
Future Volume (vph)	75	727	13	133	455	37	86	67	72	7	92	335
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.922				0.850
Flt Protected	0.950			0.950			0.950				0.997	
Satd. Flow (prot)	1685	3505	1446	1662	3471	1495	1728	1669	0	0	1781	1516
Flt Permitted	0.444			0.207			0.689				0.975	
Satd. Flow (perm)	787	3505	1446	362	3471	1495	1253	1669	0	0	1742	1516
Satd. Flow (RTOR)			121			121		48				272
Adj. Flow (vph)	89	865	15	162	555	45	105	82	88	7	98	356
Lane Group Flow (vph)	89	865	15	162	555	45	105	170	0	0	105	356
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Perm	NA		Perm	NA	Perm
Protected Phases	3	8		7	4			2			6	
Permitted Phases	8		Free	4		Free	2			6		6
Detector Phase	3	8		7	4		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	62.0		9.5	25.0		22.5	22.5		22.5	22.5	22.5
Total Split (s)	11.0	65.0		11.0	58.0		32.0	32.0		32.0	32.0	32.0
Total Split (%)	10.2%	60.2%		10.2%	53.7%		29.6%	29.6%		29.6%	29.6%	29.6%
Maximum Green (s)	9.0	58.0		9.0	51.0		26.0	26.0		26.0	26.0	26.0
Yellow Time (s)	2.0	4.0		2.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	3.0		0.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-3.0		0.0	-3.0		-2.0	-2.0			-2.0	-2.0
Total Lost Time (s)	2.0	4.0		2.0	4.0		4.0	4.0			4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Min		None	Min		None	None		None	None	None
Walk Time (s)		40.0			7.0							
Flash Dont Walk (s)		15.0			11.0							
Pedestrian Calls (#/hr)		0			0							
v/c Ratio	0.16	0.57	0.01	0.38	0.32	0.03	0.35	0.40			0.26	0.63
Control Delay	5.1	14.4	0.0	7.1	10.5	0.0	23.5	17.6			20.9	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	5.1	14.4	0.0	7.1	10.5	0.0	23.5	17.6			20.9	11.5
Queue Length 50th (ft)	8	106	0	15	54	0	29	33			28	22
Queue Length 95th (ft)	28	182	0	46	106	0	71	83			76	106
Internal Link Dist (ft)		1257			263			566			538	
Turn Bay Length (ft)	95		150	190		200	340					330
Base Capacity (vph)	645	3343	1446	449	3310	1495	643	880			894	911
Starvation Cap Reductn	0	0	0	0	363	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	0.14	0.26	0.01	0.36	0.19	0.03	0.16	0.19			0.12	0.39

Intersection Summary
Cycle Length: 108

Actuated Cycle Length: 57
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 50: Route 18 (Main Street) & Pond Street



Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	75	727	13	133	455	37	86	67	72	7	92	335
Future Volume (vph)	75	727	13	133	455	37	86	67	72	7	92	335
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	11	11	12	12	11	11	11	11	11	11
Total Lost time (s)	2.0	4.0	4.0	2.0	4.0	1.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1685	3505	1446	1662	3471	1495	1728	1670			1781	1516
Flt Permitted	0.44	1.00	1.00	0.21	1.00	1.00	0.69	1.00			0.97	1.00
Satd. Flow (perm)	788	3505	1446	361	3471	1495	1253	1670			1741	1516
Peak-hour factor, PHF	0.84	0.84	0.84	0.82	0.82	0.82	0.82	0.82	0.82	0.94	0.94	0.94
Adj. Flow (vph)	89	865	15	162	555	45	105	82	88	7	98	356
RTOR Reduction (vph)	0	0	0	0	0	0	0	37	0	0	0	208
Lane Group Flow (vph)	89	865	15	162	555	45	105	133	0	0	105	148
Heavy Vehicles (%)	0%	3%	8%	5%	4%	8%	1%	3%	0%	0%	3%	3%
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Perm	NA		Perm	NA	Perm
Protected Phases	3	8		7	4			2			6	
Permitted Phases	8		Free	4		Free	2			6		6
Actuated Green, G (s)	27.2	21.9	56.9	32.5	25.2	56.9	11.4	11.4			11.4	11.4
Effective Green, g (s)	27.2	24.9	56.9	32.5	28.2	56.9	13.4	13.4			13.4	13.4
Actuated g/C Ratio	0.48	0.44	1.00	0.57	0.50	1.00	0.24	0.24			0.24	0.24
Clearance Time (s)	2.0	7.0		2.0	7.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	460	1533	1446	402	1720	1495	295	393			410	357
v/s Ratio Prot	0.02	c0.25		c0.06	0.16			0.08				
v/s Ratio Perm	0.07		0.01	0.17		0.03	0.08				0.06	c0.10
v/c Ratio	0.19	0.56	0.01	0.40	0.32	0.03	0.36	0.34			0.26	0.41
Uniform Delay, d1	8.2	11.9	0.0	6.8	8.6	0.0	18.1	18.1			17.7	18.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	0.2	0.5	0.0	0.7	0.1	0.0	0.7	0.5			0.3	0.8
Delay (s)	8.4	12.4	0.0	7.4	8.7	0.0	18.9	18.6			18.0	19.2
Level of Service	A	B	A	A	A	A	B	B			B	B
Approach Delay (s)		11.9			7.9			18.7			18.9	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		

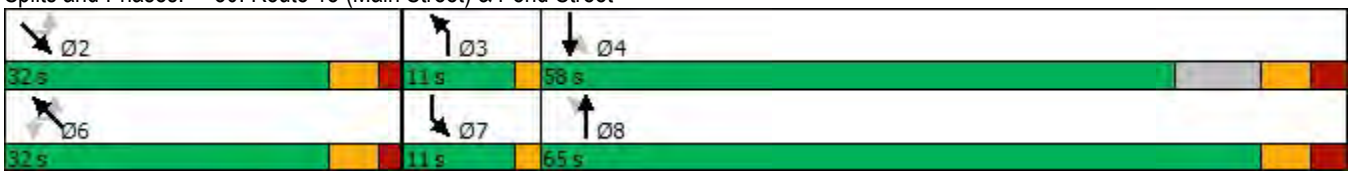
c Critical Lane Group

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	64	631	30	291	859	145	69	130	141	14	59	234
Future Volume (vph)	64	631	30	291	859	145	69	130	141	14	59	234
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.922				0.850
Flt Protected	0.950			0.950			0.950				0.991	
Satd. Flow (prot)	1685	3574	1561	1728	3574	1599	1745	1685	0	0	1820	1546
Flt Permitted	0.258			0.294			0.702				0.911	
Satd. Flow (perm)	458	3574	1561	535	3574	1599	1289	1685	0	0	1673	1546
Satd. Flow (RTOR)			121			121		49				272
Adj. Flow (vph)	66	651	31	331	976	165	77	144	157	16	69	272
Lane Group Flow (vph)	66	651	31	331	976	165	77	301	0	0	85	272
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Perm	NA		Perm	NA	Perm
Protected Phases	3	8		7	4			2			6	
Permitted Phases	8		Free	4		Free	2			6		6
Detector Phase	3	8		7	4		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	62.0		9.5	25.0		22.5	22.5		22.5	22.5	22.5
Total Split (s)	11.0	65.0		11.0	58.0		32.0	32.0		32.0	32.0	32.0
Total Split (%)	10.2%	60.2%		10.2%	53.7%		29.6%	29.6%		29.6%	29.6%	29.6%
Maximum Green (s)	9.0	58.0		9.0	51.0		26.0	26.0		26.0	26.0	26.0
Yellow Time (s)	2.0	4.0		2.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	3.0		0.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-3.0		0.0	-3.0		-2.0	-2.0			-2.0	-2.0
Total Lost Time (s)	2.0	4.0		2.0	4.0		4.0	4.0			4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Min		None	Min		None	None		None	None	None
Walk Time (s)		40.0			7.0							
Flash Dont Walk (s)		15.0			11.0							
Pedestrian Calls (#/hr)		0			0							
v/c Ratio	0.17	0.46	0.02	0.65	0.54	0.10	0.21	0.59			0.18	0.43
Control Delay	7.0	15.2	0.0	14.9	13.8	0.1	20.8	22.4			19.9	5.3
Queue Delay	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	7.0	15.2	0.0	15.7	13.8	0.1	20.8	22.4			19.9	5.3
Queue Length 50th (ft)	8	88	0	50	136	0	22	80			24	0
Queue Length 95th (ft)	29	162	0	#137	250	0	63	187			63	44
Internal Link Dist (ft)		1257			263			566			538	
Turn Bay Length (ft)	95		150	190		200	340					330
Base Capacity (vph)	451	3246	1561	507	3246	1599	606	819			787	871
Starvation Cap Reductn	0	0	0	39	407	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	0.15	0.20	0.02	0.71	0.34	0.10	0.13	0.37			0.11	0.31

Intersection Summary
Cycle Length: 108

Actuated Cycle Length: 63
Natural Cycle: 95
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 50: Route 18 (Main Street) & Pond Street



Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	64	631	30	291	859	145	69	130	141	14	59	234
Future Volume (vph)	64	631	30	291	859	145	69	130	141	14	59	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	11	11	12	12	11	11	11	11	11	11
Total Lost time (s)	2.0	4.0	4.0	2.0	4.0	1.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.99	1.00
Satd. Flow (prot)	1685	3574	1561	1728	3574	1599	1745	1685			1820	1546
Flt Permitted	0.26	1.00	1.00	0.29	1.00	1.00	0.70	1.00			0.91	1.00
Satd. Flow (perm)	457	3574	1561	535	3574	1599	1289	1685			1674	1546
Peak-hour factor, PHF	0.97	0.97	0.97	0.88	0.88	0.88	0.90	0.90	0.90	0.86	0.86	0.86
Adj. Flow (vph)	66	651	31	331	976	165	77	144	157	16	69	272
RTOR Reduction (vph)	0	0	0	0	0	0	0	35	0	0	0	195
Lane Group Flow (vph)	66	651	31	331	976	165	77	266	0	0	85	77
Heavy Vehicles (%)	0%	1%	0%	1%	1%	1%	0%	1%	0%	0%	0%	1%
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Perm	NA		Perm	NA	Perm
Protected Phases	3	8		7	4			2			6	
Permitted Phases	8		Free	4		Free	2			6		6
Actuated Green, G (s)	26.5	22.8	63.1	34.3	28.6	63.1	15.8	15.8			15.8	15.8
Effective Green, g (s)	26.5	25.8	63.1	34.3	31.6	63.1	17.8	17.8			17.8	17.8
Actuated g/C Ratio	0.42	0.41	1.00	0.54	0.50	1.00	0.28	0.28			0.28	0.28
Clearance Time (s)	2.0	7.0		2.0	7.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	263	1461	1561	470	1789	1599	363	475			472	436
v/s Ratio Prot	0.01	0.18		c0.11	c0.27			c0.16				
v/s Ratio Perm	0.09		0.02	0.28		0.10	0.06				0.05	0.05
v/c Ratio	0.25	0.45	0.02	0.70	0.55	0.10	0.21	0.56			0.18	0.18
Uniform Delay, d1	11.1	13.5	0.0	8.8	10.8	0.0	17.3	19.3			17.1	17.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	0.5	0.2	0.0	4.8	0.3	0.1	0.3	1.4			0.2	0.2
Delay (s)	11.6	13.7	0.0	13.5	11.2	0.1	17.6	20.7			17.3	17.3
Level of Service	B	B	A	B	B	A	B	C			B	B
Approach Delay (s)		12.9			10.5			20.1			17.3	
Approach LOS		B			B			C			B	

Intersection Summary					
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.60				
Actuated Cycle Length (s)	63.1	Sum of lost time (s)		10.0	
Intersection Capacity Utilization	59.0%	ICU Level of Service		B	
Analysis Period (min)	15				

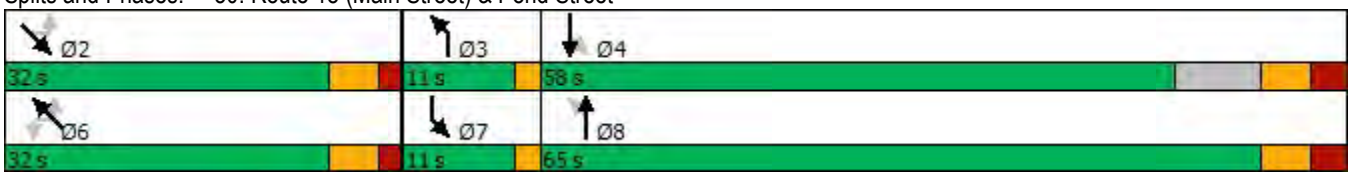
c Critical Lane Group

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	79	653	16	275	736	87	65	87	122	18	70	278
Future Volume (vph)	79	653	16	275	736	87	65	87	122	18	70	278
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.913				0.850
Flt Protected	0.950			0.950			0.950				0.990	
Satd. Flow (prot)	1685	3574	1561	1711	3539	1615	1745	1658	0	0	1818	1561
Flt Permitted	0.332			0.289			0.692				0.907	
Satd. Flow (perm)	589	3574	1561	520	3539	1615	1271	1658	0	0	1666	1561
Satd. Flow (RTOR)			121			121		63				316
Adj. Flow (vph)	81	673	16	302	809	96	71	96	134	20	80	316
Lane Group Flow (vph)	81	673	16	302	809	96	71	230	0	0	100	316
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Perm	NA		Perm	NA	Perm
Protected Phases	3	8		7	4			2			6	
Permitted Phases	8		Free	4		Free	2			6		6
Detector Phase	3	8		7	4		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	62.0		9.5	25.0		22.5	22.5		22.5	22.5	22.5
Total Split (s)	11.0	65.0		11.0	58.0		32.0	32.0		32.0	32.0	32.0
Total Split (%)	10.2%	60.2%		10.2%	53.7%		29.6%	29.6%		29.6%	29.6%	29.6%
Maximum Green (s)	9.0	58.0		9.0	51.0		26.0	26.0		26.0	26.0	26.0
Yellow Time (s)	2.0	4.0		2.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	3.0		0.0	3.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-3.0		0.0	-3.0		-2.0	-2.0			-2.0	-2.0
Total Lost Time (s)	2.0	4.0		2.0	4.0		4.0	4.0			4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Min		None	Min		None	None		None	None	None
Walk Time (s)		40.0			7.0							
Flash Dont Walk (s)		15.0			11.0							
Pedestrian Calls (#/hr)		1			0							
v/c Ratio	0.18	0.46	0.01	0.57	0.47	0.06	0.23	0.51			0.25	0.51
Control Delay	5.5	13.3	0.0	9.8	11.8	0.1	24.0	20.8			23.4	6.7
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	5.5	13.3	0.0	10.1	11.8	0.1	24.0	20.8			23.4	6.7
Queue Length 50th (ft)	8	79	0	34	90	0	17	42			24	0
Queue Length 95th (ft)	30	153	0	101	188	0	76	169			95	61
Internal Link Dist (ft)		1257			263			566			538	
Turn Bay Length (ft)	95		150	190		200	340					330
Base Capacity (vph)	540	3284	1561	530	3252	1615	654	884			858	957
Starvation Cap Reductn	0	0	0	32	375	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	0.15	0.20	0.01	0.61	0.28	0.06	0.11	0.26			0.12	0.33

Intersection Summary
Cycle Length: 108

Actuated Cycle Length: 60.1
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 50: Route 18 (Main Street) & Pond Street



Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	79	653	16	275	736	87	65	87	122	18	70	278
Future Volume (vph)	79	653	16	275	736	87	65	87	122	18	70	278
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	11	11	12	12	11	11	11	11	11	11
Total Lost time (s)	2.0	4.0	4.0	2.0	4.0	1.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.99	1.00
Satd. Flow (prot)	1685	3574	1561	1711	3539	1615	1745	1657			1818	1561
Flt Permitted	0.33	1.00	1.00	0.29	1.00	1.00	0.69	1.00			0.91	1.00
Satd. Flow (perm)	590	3574	1561	520	3539	1615	1272	1657			1666	1561
Peak-hour factor, PHF	0.97	0.97	0.97	0.91	0.91	0.91	0.91	0.91	0.91	0.88	0.88	0.88
Adj. Flow (vph)	81	673	16	302	809	96	71	96	134	20	80	316
RTOR Reduction (vph)	0	0	0	0	0	0	0	48	0	0	0	238
Lane Group Flow (vph)	81	673	16	302	809	96	71	182	0	0	100	78
Heavy Vehicles (%)	0%	1%	0%	2%	2%	0%	0%	0%	2%	0%	0%	0%
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Perm	NA		Perm	NA	Perm
Protected Phases	3	8		7	4			2			6	
Permitted Phases	8		Free	4		Free	2			6		6
Actuated Green, G (s)	27.1	21.7	59.0	33.5	26.1	59.0	12.5	12.5			12.5	12.5
Effective Green, g (s)	27.1	24.7	59.0	33.5	29.1	59.0	14.5	14.5			14.5	14.5
Actuated g/C Ratio	0.46	0.42	1.00	0.57	0.49	1.00	0.25	0.25			0.25	0.25
Clearance Time (s)	2.0	7.0		2.0	7.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	371	1496	1561	493	1745	1615	312	407			409	383
v/s Ratio Prot	0.02	0.19		c0.10	c0.23			c0.11				
v/s Ratio Perm	0.08		0.01	0.25		0.06	0.06				0.06	0.05
v/c Ratio	0.22	0.45	0.01	0.61	0.46	0.06	0.23	0.45			0.24	0.20
Uniform Delay, d1	9.1	12.3	0.0	7.3	9.8	0.0	17.8	18.9			17.9	17.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	0.3	0.2	0.0	2.3	0.2	0.1	0.4	0.8			0.3	0.3
Delay (s)	9.4	12.5	0.0	9.6	10.0	0.1	18.1	19.6			18.2	17.9
Level of Service	A	B	A	A	B	A	B	B			B	B
Approach Delay (s)		11.9			9.1			19.3			18.0	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Trotter Pond at Patriot Parkway

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	55	139	135	13	66	41
Future Vol, veh/h	55	139	135	13	66	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	74	74	81	81
Heavy Vehicles, %	4	3	4	0	0	7
Mvmt Flow	60	151	182	18	81	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	200	0	-	0	462	191
Stage 1	-	-	-	-	191	-
Stage 2	-	-	-	-	271	-
Critical Hdwy	4.14	-	-	-	6.4	6.27
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.236	-	-	-	3.5	3.363
Pot Cap-1 Maneuver	1360	-	-	-	562	838
Stage 1	-	-	-	-	846	-
Stage 2	-	-	-	-	779	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1360	-	-	-	535	838
Mov Cap-2 Maneuver	-	-	-	-	535	-
Stage 1	-	-	-	-	805	-
Stage 2	-	-	-	-	779	-

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1360	-	-	-	621
HCM Lane V/C Ratio	0.044	-	-	-	0.213
HCM Control Delay (s)	7.8	0	-	-	12.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	75	140	246	27	42	68
Future Vol, veh/h	75	140	246	27	42	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	79	79	92	92	81	81
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	95	177	267	29	52	84

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	296	0	-	0	649	282
Stage 1	-	-	-	-	282	-
Stage 2	-	-	-	-	367	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1277	-	-	-	438	762
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	705	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1277	-	-	-	402	762
Mov Cap-2 Maneuver	-	-	-	-	402	-
Stage 1	-	-	-	-	706	-
Stage 2	-	-	-	-	705	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1277	-	-	-	568
HCM Lane V/C Ratio	0.074	-	-	-	0.239
HCM Control Delay (s)	8	0	-	-	13.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.9

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	67	148	177	16	36	70
Future Vol, veh/h	67	148	177	16	36	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	79	79	80	80
Heavy Vehicles, %	0	1	0	0	0	0
Mvmt Flow	80	176	224	20	45	88

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	244	0	-	0	570	234
Stage 1	-	-	-	-	234	-
Stage 2	-	-	-	-	336	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1334	-	-	-	486	810
Stage 1	-	-	-	-	810	-
Stage 2	-	-	-	-	728	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1334	-	-	-	454	810
Mov Cap-2 Maneuver	-	-	-	-	454	-
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	728	-

Approach	EB	WB	SB
HCM Control Delay, s	2.5	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1334	-	-	-	640
HCM Lane V/C Ratio	0.06	-	-	-	0.207
HCM Control Delay (s)	7.9	0	-	-	12.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.8

Memorial Grove Avenue at Snow Bird Avenue

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	0	0	127	0	0	0	0	44	0	0	0
Future Vol, veh/h	0	0	0	127	0	0	0	0	44	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	25	25	81	81	81	73	73	73	25	25	25
Heavy Vehicles, %	0	0	0	4	0	0	0	0	5	0	0	0
Mvmt Flow	0	0	0	157	0	0	0	0	60	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	4	0	0	318	318	4	348	318	0
Stage 1	-	-	-	-	-	-	4	4	-	314	314	-
Stage 2	-	-	-	-	-	-	314	314	-	34	4	-
Critical Hdwy	4.1	-	-	4.14	-	-	7.1	6.5	6.25	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.236	-	-	3.5	4	3.345	3.5	4	3.3
Pot Cap-1 Maneuver	-	-	-	1605	-	-	639	602	1071	610	602	-
Stage 1	-	-	-	-	-	-	1024	897	-	701	660	-
Stage 2	-	-	-	-	-	-	701	660	-	987	897	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	1605	-	-	-	543	1071	533	543	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	543	-	533	543	-
Stage 1	-	-	-	-	-	-	1024	897	-	701	595	-
Stage 2	-	-	-	-	-	-	632	595	-	931	897	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	7.5		0
HCM LOS			-	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-	1605	-	-	-
HCM Lane V/C Ratio	-	-	-	-	0.098	-	-	-
HCM Control Delay (s)	-	0	-	-	7.5	0	-	0
HCM Lane LOS	-	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	0.3	-	-	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	0	0	110	0	0	0	0	83	0	0	0
Future Vol, veh/h	0	0	0	110	0	0	0	0	83	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	25	25	77	77	77	90	90	90	25	25	25
Heavy Vehicles, %	0	0	0	2	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	143	0	0	0	0	92	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	4	0	0	290	290	4	336	290	0
Stage 1	-	-	-	-	-	-	4	4	-	286	286	-
Stage 2	-	-	-	-	-	-	286	286	-	50	4	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	-	-	-	1618	-	-	666	624	1085	622	624	-
Stage 1	-	-	-	-	-	-	1024	897	-	726	679	-
Stage 2	-	-	-	-	-	-	726	679	-	968	897	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	1618	-	-	-	569	1085	531	569	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	569	-	531	569	-
Stage 1	-	-	-	-	-	-	1024	897	-	726	619	-
Stage 2	-	-	-	-	-	-	662	619	-	886	897	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	7.4		0
HCM LOS			-	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-	1618	-	-	-
HCM Lane V/C Ratio	-	-	-	-	0.088	-	-	-
HCM Control Delay (s)	-	0	-	-	7.4	0	-	0
HCM Lane LOS	-	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	0.3	-	-	-

Intersection	
Int Delay, s/veh	4

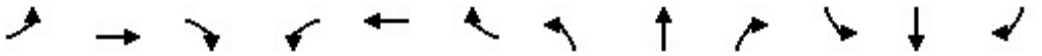
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	0	0	108	0	0	0	0	104	0	0	0
Future Vol, veh/h	0	0	0	108	0	0	0	0	104	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	25	25	77	77	77	90	90	90	25	25	25
Heavy Vehicles, %	0	0	0	3	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	140	0	0	0	0	116	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	4	0	0	284	284	4	342	284	0
Stage 1	-	-	-	-	-	-	4	4	-	280	280	-
Stage 2	-	-	-	-	-	-	280	280	-	62	4	-
Critical Hdwy	4.1	-	-	4.13	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.227	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	-	-	-	1611	-	-	672	628	1085	616	628	-
Stage 1	-	-	-	-	-	-	1024	897	-	731	683	-
Stage 2	-	-	-	-	-	-	731	683	-	954	897	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	1611	-	-	-	573	1085	514	573	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	573	-	514	573	-
Stage 1	-	-	-	-	-	-	1024	897	-	731	624	-
Stage 2	-	-	-	-	-	-	667	624	-	852	897	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	7.4		0
HCM LOS			-	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-	1611	-	-	-
HCM Lane V/C Ratio	-	-	-	-	0.087	-	-	-
HCM Control Delay (s)	-	0	-	-	7.4	0	-	0
HCM Lane LOS	-	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	0.3	-	-	-

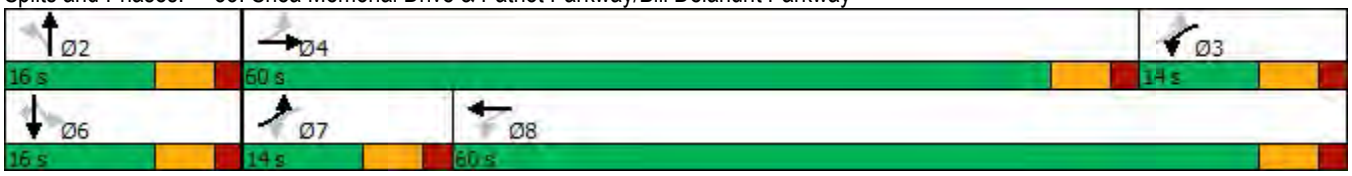
Bill Delahunt Parkway and Patriot Parkway at Shea Memorial Drive

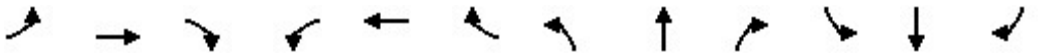


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	187	0	1	129	21	0	0	0	13	4	8
Future Volume (vph)	6	187	0	1	129	21	0	0	0	13	4	8
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.979							0.850
Flt Protected	0.950			0.950							0.963	
Satd. Flow (prot)	1805	3574	0	1805	3394	0	0	1900	0	0	1830	1615
Flt Permitted	0.390			0.623								
Satd. Flow (perm)	741	3574	0	1184	3394	0	0	1900	0	0	1900	1615
Satd. Flow (RTOR)					29							182
Adj. Flow (vph)	7	205	0	1	177	29	0	0	0	17	5	10
Lane Group Flow (vph)	7	205	0	1	206	0	0	0	0	0	22	10
Turn Type	custom	NA		custom	NA					Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	3 4			7 8			2			6		6
Detector Phase	7	4		3	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		11.0	22.5		11.0	11.0		11.0	11.0	11.0
Total Split (s)	14.0	60.0		14.0	60.0		16.0	16.0		16.0	16.0	16.0
Total Split (%)	15.6%	66.7%		15.6%	66.7%		17.8%	17.8%		17.8%	17.8%	17.8%
Maximum Green (s)	8.0	54.0		8.0	54.0		10.0	10.0		10.0	10.0	10.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-2.0			-2.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	6.0
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None		None	None	None
v/c Ratio	0.01	0.08		0.00	0.08						0.02	0.01
Control Delay	2.5	4.4		3.0	4.1						7.2	0.0
Queue Delay	0.0	0.0		0.0	0.0						0.0	0.0
Total Delay	2.5	4.4		3.0	4.1						7.2	0.0
Queue Length 50th (ft)	0	0		0	0						1	0
Queue Length 95th (ft)	3	35		1	25						13	0
Internal Link Dist (ft)		2355			736			245			1017	
Turn Bay Length (ft)	350			120								120
Base Capacity (vph)	1308	3574		1350	3394						1517	1183
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	0.01	0.06		0.00	0.06						0.01	0.01

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 18
Natural Cycle: 45
Control Type: Actuated-Uncoordinated

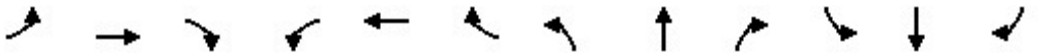
Splits and Phases: 53: Shea Memorial Drive & Patriot Parkway/Bill Delahunt Parkway





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	187	0	1	129	21	0	0	0	13	4	8
Future Volume (vph)	6	187	0	1	129	21	0	0	0	13	4	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0						4.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	1.00
Frt	1.00	1.00		1.00	0.98						1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00						0.96	1.00
Satd. Flow (prot)	1805	3574		1805	3393						1829	1615
Flt Permitted	0.39	1.00		0.62	1.00						1.00	1.00
Satd. Flow (perm)	741	3574		1184	3393						1900	1615
Peak-hour factor, PHF	0.91	0.91	0.91	0.73	0.73	0.73	0.25	0.25	0.25	0.78	0.78	0.78
Adj. Flow (vph)	7	205	0	1	177	29	0	0	0	17	5	10
RTOR Reduction (vph)	0	0	0	0	21	0	0	0	0	0	0	10
Lane Group Flow (vph)	7	205	0	1	185	0	0	0	0	0	22	0
Heavy Vehicles (%)	0%	1%	0%	0%	4%	5%	0%	0%	0%	0%	0%	0%
Turn Type	custom	NA		custom	NA					Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	3 4			7 8			2			6		6
Actuated Green, G (s)	11.2	4.7		11.2	4.7						0.6	0.6
Effective Green, g (s)	13.2	6.7		13.2	6.7						2.6	0.6
Actuated g/C Ratio	0.55	0.28		0.55	0.28						0.11	0.03
Clearance Time (s)	6.0	6.0		6.0	6.0						6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	522	1006		721	955						207	40
v/s Ratio Prot	0.00	c0.06		0.00	c0.05							
v/s Ratio Perm	0.01			0.00							c0.01	0.00
v/c Ratio	0.01	0.20		0.00	0.19						0.11	0.01
Uniform Delay, d1	2.7	6.5		2.4	6.5						9.6	11.3
Progression Factor	1.00	1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2	0.0	0.1		0.0	0.1						0.2	0.1
Delay (s)	2.7	6.6		2.4	6.6						9.8	11.4
Level of Service	A	A		A	A						A	B
Approach Delay (s)		6.5			6.6			0.0			10.3	
Approach LOS		A			A			A			B	

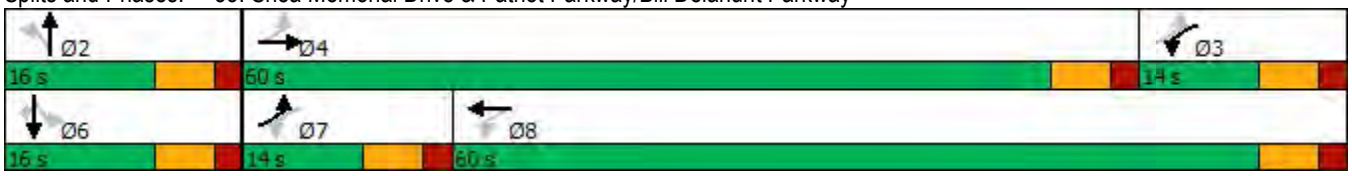
Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	23.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	16.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

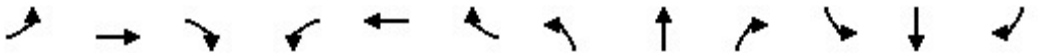


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	117	1	0	268	34	0	0	0	17	0	9
Future Volume (vph)	9	117	1	0	268	34	0	0	0	17	0	9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.983							0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1805	3606	0	1900	3549	0	0	1900	0	0	1805	1615
Flt Permitted	0.372											
Satd. Flow (perm)	707	3606	0	1900	3549	0	0	1900	0	0	1900	1615
Satd. Flow (RTOR)		1			28							182
Adj. Flow (vph)	12	158	1	0	327	41	0	0	0	21	0	11
Lane Group Flow (vph)	12	159	0	0	368	0	0	0	0	0	21	11
Turn Type	custom	NA		custom	NA					Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	3 4			7 8			2			6		6
Detector Phase	7	4		3	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		11.0	22.5		11.0	11.0		11.0	11.0	11.0
Total Split (s)	14.0	60.0		14.0	60.0		16.0	16.0		16.0	16.0	16.0
Total Split (%)	15.6%	66.7%		15.6%	66.7%		17.8%	17.8%		17.8%	17.8%	17.8%
Maximum Green (s)	8.0	54.0		8.0	54.0		10.0	10.0		10.0	10.0	10.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-2.0			-2.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	6.0
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None		None	None	None
v/c Ratio	0.01	0.05			0.13						0.02	0.01
Control Delay	2.2	1.4			3.7						8.2	0.0
Queue Delay	0.0	0.0			0.0						0.0	0.0
Total Delay	2.2	1.4			3.7						8.2	0.0
Queue Length 50th (ft)	0	0			0						1	0
Queue Length 95th (ft)	4	11			51						15	0
Internal Link Dist (ft)		2355			736			245			1017	
Turn Bay Length (ft)	350											120
Base Capacity (vph)	1309	3606			3549						1507	1177
Starvation Cap Reductn	0	0			0						0	0
Spillback Cap Reductn	0	0			0						0	0
Storage Cap Reductn	0	0			0						0	0
Reduced v/c Ratio	0.01	0.04			0.10						0.01	0.01

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 18.8
Natural Cycle: 45
Control Type: Actuated-Uncoordinated

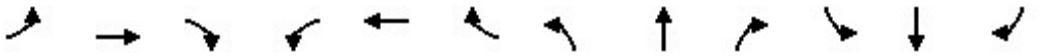
Splits and Phases: 53: Shea Memorial Drive & Patriot Parkway/Bill Delahunt Parkway





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	117	1	0	268	34	0	0	0	17	0	9
Future Volume (vph)	9	117	1	0	268	34	0	0	0	17	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0						4.0	6.0
Lane Util. Factor	1.00	0.95			0.95						1.00	1.00
Frt	1.00	1.00			0.98						1.00	0.85
Flt Protected	0.95	1.00			1.00						0.95	1.00
Satd. Flow (prot)	1805	3607			3550						1805	1615
Flt Permitted	0.37	1.00			1.00						1.00	1.00
Satd. Flow (perm)	708	3607			3550						1900	1615
Peak-hour factor, PHF	0.74	0.74	0.74	0.82	0.82	0.82	0.25	0.25	0.25	0.81	0.81	0.81
Adj. Flow (vph)	12	158	1	0	327	41	0	0	0	21	0	11
RTOR Reduction (vph)	0	0	0	0	18	0	0	0	0	0	0	11
Lane Group Flow (vph)	12	159	0	0	350	0	0	0	0	0	21	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	custom	NA		custom	NA					Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	3 4			7 8			2			6		6
Actuated Green, G (s)	13.8	13.8			7.3						0.6	0.6
Effective Green, g (s)	15.8	15.8			9.3						2.6	0.6
Actuated g/C Ratio	0.60	0.60			0.35						0.10	0.02
Clearance Time (s)	6.0	6.0			6.0						6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0						3.0	3.0
Lane Grp Cap (vph)	527	2158			1250						187	36
v/s Ratio Prot	0.00	c0.04			c0.10							
v/s Ratio Perm	0.01										c0.01	0.00
v/c Ratio	0.02	0.07			0.28						0.11	0.01
Uniform Delay, d1	2.4	2.2			6.1						10.8	12.6
Progression Factor	1.00	1.00			1.00						1.00	1.00
Incremental Delay, d2	0.0	0.0			0.1						0.3	0.1
Delay (s)	2.5	2.2			6.3						11.1	12.7
Level of Service	A	A			A						B	B
Approach Delay (s)		2.3			6.3			0.0			11.7	
Approach LOS		A			A			A			B	

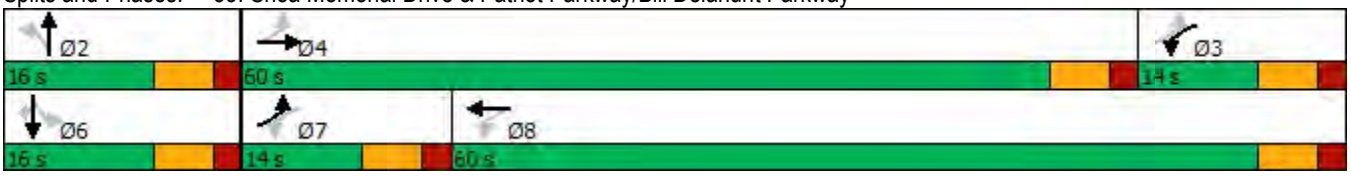
Intersection Summary			
HCM 2000 Control Delay	5.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	26.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	21.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

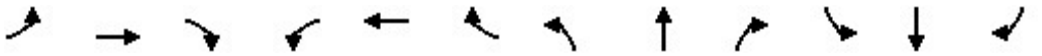


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	167	0	0	150	21	0	0	0	19	1	5
Future Volume (vph)	10	167	0	0	150	21	0	0	0	19	1	5
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.982							0.850
Flt Protected	0.950										0.954	
Satd. Flow (prot)	1805	3610	0	1900	3545	0	0	1900	0	0	1813	1615
Flt Permitted	0.397											
Satd. Flow (perm)	754	3610	0	1900	3545	0	0	1900	0	0	1900	1615
Satd. Flow (RTOR)					23							182
Adj. Flow (vph)	11	188	0	0	165	23	0	0	0	24	1	6
Lane Group Flow (vph)	11	188	0	0	188	0	0	0	0	0	25	6
Turn Type	custom	NA		custom	NA					Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	3 4			7 8			2			6		6
Detector Phase	7	4		3	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		11.0	22.5		11.0	11.0		11.0	11.0	11.0
Total Split (s)	14.0	60.0		14.0	60.0		16.0	16.0		16.0	16.0	16.0
Total Split (%)	15.6%	66.7%		15.6%	66.7%		17.8%	17.8%		17.8%	17.8%	17.8%
Maximum Green (s)	8.0	54.0		8.0	54.0		10.0	10.0		10.0	10.0	10.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-2.0			-2.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	6.0
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None		None	None	None
v/c Ratio	0.01	0.07			0.08						0.02	0.01
Control Delay	2.4	1.7			4.3						7.0	0.0
Queue Delay	0.0	0.0			0.0						0.0	0.0
Total Delay	2.4	1.7			4.3						7.0	0.0
Queue Length 50th (ft)	0	0			0						1	0
Queue Length 95th (ft)	4	16			32						14	0
Internal Link Dist (ft)		2355			736			245			1017	
Turn Bay Length (ft)	350											120
Base Capacity (vph)	1278	3610			3545						1479	1159
Starvation Cap Reductn	0	0			0						0	0
Spillback Cap Reductn	0	0			0						0	0
Storage Cap Reductn	0	0			0						0	0
Reduced v/c Ratio	0.01	0.05			0.05						0.02	0.01

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 18.4
Natural Cycle: 45
Control Type: Actuated-Uncoordinated

Splits and Phases: 53: Shea Memorial Drive & Patriot Parkway/Bill Delahunt Parkway





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	167	0	0	150	21	0	0	0	19	1	5
Future Volume (vph)	10	167	0	0	150	21	0	0	0	19	1	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0						4.0	6.0
Lane Util. Factor	1.00	0.95			0.95						1.00	1.00
Frt	1.00	1.00			0.98						1.00	0.85
Flt Protected	0.95	1.00			1.00						0.95	1.00
Satd. Flow (prot)	1805	3610			3544						1813	1615
Flt Permitted	0.40	1.00			1.00						1.00	1.00
Satd. Flow (perm)	754	3610			3544						1900	1615
Peak-hour factor, PHF	0.89	0.89	0.89	0.91	0.91	0.91	0.25	0.25	0.25	0.78	0.78	0.78
Adj. Flow (vph)	11	188	0	0	165	23	0	0	0	24	1	6
RTOR Reduction (vph)	0	0	0	0	17	0	0	0	0	0	0	6
Lane Group Flow (vph)	11	188	0	0	171	0	0	0	0	0	25	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	custom	NA		custom	NA					Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	3 4			7 8			2			6		6
Actuated Green, G (s)	11.3	11.3			4.7						0.7	0.7
Effective Green, g (s)	13.3	13.3			6.7						2.7	0.7
Actuated g/C Ratio	0.55	0.55			0.28						0.11	0.03
Clearance Time (s)	6.0	6.0			6.0						6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0						3.0	3.0
Lane Grp Cap (vph)	531	2000			989						213	47
v/s Ratio Prot	0.00	c0.05			c0.05							
v/s Ratio Perm	0.01										c0.01	0.00
v/c Ratio	0.02	0.09			0.17						0.12	0.00
Uniform Delay, d1	2.7	2.5			6.6						9.6	11.3
Progression Factor	1.00	1.00			1.00						1.00	1.00
Incremental Delay, d2	0.0	0.0			0.1						0.2	0.0
Delay (s)	2.8	2.5			6.6						9.8	11.3
Level of Service	A	A			A						A	B
Approach Delay (s)		2.5			6.6			0.0			10.1	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	4.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	24.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Route 139 at Old Randolph Street and Hancock Street

Intersection	
Int Delay, s/veh	143.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		⇕						⇕			⇕	
Traffic Vol, veh/h	212	112	16	0	0	0	21	164	118	74	520	18
Future Vol, veh/h	212	112	16	0	0	0	21	164	118	74	520	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	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	25	25	25	86	86	86	81	81	81
Heavy Vehicles, %	1	1	0	0	0	0	14	4	4	3	2	0
Mvmt Flow	255	135	19	0	0	0	24	191	137	91	642	22

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1143	1154	260	664	0	0	328	0	0
Stage 1	308	308	-	-	-	-	-	-	-
Stage 2	835	846	-	-	-	-	-	-	-
Critical Hdwy	6.41	6.51	6.2	4.24	-	-	4.13	-	-
Critical Hdwy Stg 1	5.41	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.41	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.3	2.326	-	-	2.227	-	-
Pot Cap-1 Maneuver	~ 222	198	784	871	-	-	1226	-	-
Stage 1	748	662	-	-	-	-	-	-	-
Stage 2	428	380	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	~ 189	0	784	871	-	-	1226	-	-
Mov Cap-2 Maneuver	~ 189	0	-	-	-	-	-	-	-
Stage 1	723	0	-	-	-	-	-	-	-
Stage 2	377	0	-	-	-	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	$ 527.6	0.6	1
HCM LOS	F		

Minor Lane/Major Mvmt	NWL	NWT	NWR	EBLn1	SEL	SET	SER
Capacity (veh/h)	1226	-	-	200	871	-	-
HCM Lane V/C Ratio	0.075	-	-	2.048	0.028	-	-
HCM Control Delay (s)	8.2	0	-	$ 527.6	9.3	0	-
HCM Lane LOS	A	A	-	F	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	31.1	0.1	-	-

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

Intersection	
Int Delay, s/veh	132.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		⇕						⇕			⇕	
Traffic Vol, veh/h	130	70	15	0	0	0	38	419	410	132	373	8
Future Vol, veh/h	130	70	15	0	0	0	38	419	410	132	373	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	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	79	79	79	25	25	25	92	92	92	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	2	1	0
Mvmt Flow	165	89	19	0	0	0	41	455	446	152	429	9

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1498	1502	678	438	0	0	901	0	0
Stage 1	760	760	-	-	-	-	-	-	-
Stage 2	738	742	-	-	-	-	-	-	-
Critical Hdwy	6.4	6.5	6.2	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	5.4	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 136	123	456	1133	-	-	754	-	-
Stage 1	465	417	-	-	-	-	-	-	-
Stage 2	476	425	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	~ 92	0	456	1133	-	-	754	-	-
Mov Cap-2 Maneuver	~ 92	0	-	-	-	-	-	-	-
Stage 1	428	0	-	-	-	-	-	-	-
Stage 2	349	0	-	-	-	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	$ 868.9	0.4	2.8
HCM LOS	F		

Minor Lane/Major Mvmt	NWL	NWT	NWR	EBLn1	SEL	SET	SER
Capacity (veh/h)	754	-	-	100	1133	-	-
HCM Lane V/C Ratio	0.201	-	-	2.722	0.036	-	-
HCM Control Delay (s)	11	0	-	$ 868.9	8.3	0	-
HCM Lane LOS	B	A	-	F	A	A	-
HCM 95th %tile Q(veh)	0.7	-	-	25.5	0.1	-	-

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

Intersection	
Int Delay, s/veh	24.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		⇕						⇕			⇕	
Traffic Vol, veh/h	136	74	19	0	0	0	22	343	186	49	335	7
Future Vol, veh/h	136	74	19	0	0	0	22	343	186	49	335	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	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	85	85	85	25	25	25	92	92	92	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	1	0	2	0
Mvmt Flow	160	87	22	0	0	0	24	373	202	57	390	8

Major/Minor	Minor1					Major1			Major2		
Conflicting Flow All	1030	1034	474			398	0	0	575	0	0
Stage 1	522	522	-			-	-	-	-	-	-
Stage 2	508	512	-			-	-	-	-	-	-
Critical Hdwy	6.4	6.5	6.2			4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	5.4	5.5	-			-	-	-	-	-	-
Critical Hdwy Stg 2	5.4	5.5	-			-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3			2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	261	234	595			1172	-	-	1008	-	-
Stage 1	599	534	-			-	-	-	-	-	-
Stage 2	608	540	-			-	-	-	-	-	-
Platoon blocked, %							-	-		-	-
Mov Cap-1 Maneuver	234	0	595			1172	-	-	1008	-	-
Mov Cap-2 Maneuver	234	0	-			-	-	-	-	-	-
Stage 1	580	0	-			-	-	-	-	-	-
Stage 2	564	0	-			-	-	-	-	-	-

Approach	EB	SE	NW
HCM Control Delay, s	117.7	0.3	1.1
HCM LOS	F		

Minor Lane/Major Mvmt	NWL	NWT	NWR	EBLn1	SEL	SET	SER
Capacity (veh/h)	1008	-	-	253	1172	-	-
HCM Lane V/C Ratio	0.057	-	-	1.065	0.02	-	-
HCM Control Delay (s)	8.8	0	-	117.7	8.1	0	-
HCM Lane LOS	A	A	-	F	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	11.1	0.1	-	-

Route 139 at Old Randolph Street and Chestnut Street

Intersection	
Int Delay, s/veh	182.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	7	228	8	202	404	22	20	80	271	27	78	44
Future Vol, veh/h	7	228	8	202	404	22	20	80	271	27	78	44
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	89	89	89	83	83	83	81	81	81
Heavy Vehicles, %	0	5	13	3	2	0	0	0	4	0	4	0
Mvmt Flow	8	275	10	227	454	25	24	96	327	33	96	54

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	479	0	0	285	0	0	1292	1229	280	1429	1222	467
Stage 1	-	-	-	-	-	-	296	296	-	921	921	-
Stage 2	-	-	-	-	-	-	996	933	-	508	301	-
Critical Hdwy	4.1	-	-	4.13	-	-	7.1	6.5	6.24	7.1	6.54	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.54	-
Follow-up Hdwy	2.2	-	-	2.227	-	-	3.5	4	3.336	3.5	4.036	3.3
Pot Cap-1 Maneuver	1094	-	-	1271	-	-	141	179	754	114	178	600
Stage 1	-	-	-	-	-	-	717	672	-	327	347	-
Stage 2	-	-	-	-	-	-	297	348	-	551	661	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1094	-	-	1271	-	-	44	134	754	~ 22	133	600
Mov Cap-2 Maneuver	-	-	-	-	-	-	44	134	-	~ 22	133	-
Stage 1	-	-	-	-	-	-	711	666	-	324	262	-
Stage 2	-	-	-	-	-	-	129	263	-	265	655	-

Approach	EB	WB	NE	SW
HCM Control Delay, s	0.2	2.7	$ 363.8	$ 719.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NELn1	EBL	EBT	EBR	WBL	WBT	WBR	SWLn1
Capacity (veh/h)	263	1094	-	-	1271	-	-	79
HCM Lane V/C Ratio	1.7	0.008	-	-	0.179	-	-	2.328
HCM Control Delay (s)	$ 363.8	8.3	0	-	8.4	0	-	$ 719.7
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	28.8	0	-	-	0.6	-	-	17.1

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

Intersection	
Int Delay, s/veh	169.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	8	443	7	161	410	38	5	55	177	28	127	96
Future Vol, veh/h	8	443	7	161	410	38	5	55	177	28	127	96
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	91	91	91	87	87	87	73	73	73
Heavy Vehicles, %	0	1	0	1	2	0	0	0	3	0	0	2
Mvmt Flow	8	466	7	177	451	42	6	63	203	38	174	132

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	493	0	0	473	0	0	1465	1333	470	1445	1315	472
Stage 1	-	-	-	-	-	-	486	486	-	826	826	-
Stage 2	-	-	-	-	-	-	979	847	-	619	489	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.23	7.1	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.327	3.5	4	3.318
Pot Cap-1 Maneuver	1081	-	-	1094	-	-	107	155	591	111	~ 159	592
Stage 1	-	-	-	-	-	-	566	554	-	369	389	-
Stage 2	-	-	-	-	-	-	304	381	-	480	553	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1081	-	-	1094	-	-	-	119	591	~ 35	~ 122	592
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	119	-	~ 35	~ 122	-
Stage 1	-	-	-	-	-	-	560	548	-	365	302	-
Stage 2	-	-	-	-	-	-	78	296	-	276	547	-

Approach	EB	WB	NE	SW
HCM Control Delay, s	0.1	2.4		$ 864.5
HCM LOS			-	F

Minor Lane/Major Mvmt	NELn1	EBL	EBT	EBR	WBL	WBT	WBR	SWLn1
Capacity (veh/h)	-	1081	-	-	1094	-	-	125
HCM Lane V/C Ratio	-	0.008	-	-	0.162	-	-	2.751
HCM Control Delay (s)	-	8.4	0	-	8.9	0	-	$ 864.5
HCM Lane LOS	-	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	-	0	-	-	0.6	-	-	31.5

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

Intersection	
Int Delay, s/veh	65.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	347	5	226	334	47	2	43	169	38	106	45
Future Vol, veh/h	4	347	5	226	334	47	2	43	169	38	106	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	99	99	99	85	85	85	91	91	91
Heavy Vehicles, %	0	0	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	4	381	5	228	337	47	2	51	199	42	116	49

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	384	0	0	386	0	0	1291	1232	384	1334	1211	361
Stage 1	-	-	-	-	-	-	392	392	-	817	817	-
Stage 2	-	-	-	-	-	-	899	840	-	517	394	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1186	-	-	1184	-	-	142	179	668	132	184	688
Stage 1	-	-	-	-	-	-	637	610	-	373	393	-
Stage 2	-	-	-	-	-	-	336	384	-	545	609	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1186	-	-	1184	-	-	32	134	668	54	138	688
Mov Cap-2 Maneuver	-	-	-	-	-	-	32	134	-	54	138	-
Stage 1	-	-	-	-	-	-	634	608	-	372	296	-
Stage 2	-	-	-	-	-	-	142	289	-	350	607	-

Approach	EB	WB	NE	SW
HCM Control Delay, s	0.1	3.3	41.7	$ 404.2
HCM LOS			E	F

Minor Lane/Major Mvmt	NELn1	EBL	EBT	EBR	WBL	WBT	WBR	SWLn1
Capacity (veh/h)	336	1186	-	-	1184	-	-	123
HCM Lane V/C Ratio	0.749	0.004	-	-	0.193	-	-	1.689
HCM Control Delay (s)	41.7	8	0	-	8.8	0	-	$ 404.2
HCM Lane LOS	E	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	5.8	0	-	-	0.7	-	-	15.6

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

Randolph Street (Route 139) at Lincoln Street

Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	593	15	73	607	5	144
Future Vol, veh/h	593	15	73	607	5	144
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	91	91	87	87
Heavy Vehicles, %	4	7	3	2	0	2
Mvmt Flow	751	19	80	667	6	166

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	770	0	1588	761
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	827	-
Critical Hdwy	-	-	4.13	-	6.4	6.22
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.227	-	3.5	3.318
Pot Cap-1 Maneuver	-	-	840	-	120	405
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	433	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	840	-	102	405
Mov Cap-2 Maneuver	-	-	-	-	102	-
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	368	-

Approach	EB	WB	NE
HCM Control Delay, s	0	1	23
HCM LOS			C

Minor Lane/Major Mvmt	NELn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	368	-	-	840	-
HCM Lane V/C Ratio	0.465	-	-	0.095	-
HCM Control Delay (s)	23	-	-	9.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2.4	-	-	0.3	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	587	9	154	638	5	180
Future Vol, veh/h	587	9	154	638	5	180
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	93	93	81	81
Heavy Vehicles, %	2	11	1	2	0	1
Mvmt Flow	645	10	166	686	6	222

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	655	0	1668	650
Stage 1	-	-	-	-	650	-
Stage 2	-	-	-	-	1018	-
Critical Hdwy	-	-	4.11	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	937	-	107	471
Stage 1	-	-	-	-	523	-
Stage 2	-	-	-	-	352	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	937	-	76	471
Mov Cap-2 Maneuver	-	-	-	-	76	-
Stage 1	-	-	-	-	523	-
Stage 2	-	-	-	-	251	-

Approach	EB	WB	NE
HCM Control Delay, s	0	1.9	24
HCM LOS			C

Minor Lane/Major Mvmt	NELn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	413	-	-	937	-
HCM Lane V/C Ratio	0.553	-	-	0.177	-
HCM Control Delay (s)	24	-	-	9.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	3.3	-	-	0.6	-

Intersection	
Int Delay, s/veh	2.7

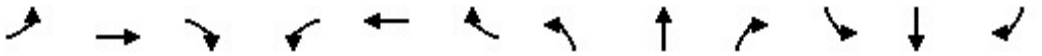
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	606	16	115	644	10	112
Future Vol, veh/h	606	16	115	644	10	112
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	94	94	82	82
Heavy Vehicles, %	0	0	0	1	0	1
Mvmt Flow	631	17	122	685	12	137

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	648	0	1569	640
Stage 1	-	-	-	-	640	-
Stage 2	-	-	-	-	929	-
Critical Hdwy	-	-	4.1	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	947	-	123	477
Stage 1	-	-	-	-	529	-
Stage 2	-	-	-	-	388	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	947	-	97	477
Mov Cap-2 Maneuver	-	-	-	-	97	-
Stage 1	-	-	-	-	529	-
Stage 2	-	-	-	-	307	-

Approach	EB	WB	NE
HCM Control Delay, s	0	1.4	21.8
HCM LOS			C

Minor Lane/Major Mvmt	NELn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	361	-	-	947	-
HCM Lane V/C Ratio	0.412	-	-	0.129	-
HCM Control Delay (s)	21.8	-	-	9.4	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2	-	-	0.4	-

Route 18 at Randolph Street and North Avenue (Route 139)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	260	165	54	421	67	247	722	57	63	443	85
Future Volume (vph)	134	260	165	54	421	67	247	722	57	63	443	85
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.979			0.989			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1616	1766	1531	1656	3764	0	1829	3307	0	1641	3345	0
Flt Permitted	0.207			0.410			0.950			0.950		
Satd. Flow (perm)	352	1766	1531	715	3764	0	1829	3307	0	1641	3345	0
Satd. Flow (RTOR)			110		12			6			16	
Adj. Flow (vph)	146	283	179	59	463	74	260	760	60	76	534	102
Lane Group Flow (vph)	146	283	179	59	537	0	260	820	0	76	636	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	5	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	22.5	10.0	10.0	22.5		10.0	22.5		10.0	22.5	
Total Split (s)	13.0	37.0	19.0	13.0	37.0		19.0	48.0		19.0	48.0	
Total Split (%)	9.1%	25.9%	13.3%	9.1%	25.9%		13.3%	33.6%		13.3%	33.6%	
Maximum Green (s)	9.0	31.0	15.0	9.0	31.0		15.0	41.0		15.0	41.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0	0.0	0.0	2.0		0.0	3.0		0.0	3.0	
Lost Time Adjust (s)	0.0	-2.0	0.0	0.0	-2.0		0.0	-3.0		0.0	-3.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.60	0.58	0.23	0.20	0.60		0.90	0.63		0.45	0.61	
Control Delay	38.4	41.2	8.0	27.0	38.2		77.9	30.8		56.5	32.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	38.4	41.2	8.0	27.0	38.2		77.9	30.8		56.5	32.4	
Queue Length 50th (ft)	57	147	22	22	143		151	204		42	157	
Queue Length 95th (ft)	#170	350	69	75	295		#498	450		113	294	
Internal Link Dist (ft)		172			116			480			2832	
Turn Bay Length (ft)	110		90	75			290			170		
Base Capacity (vph)	242	613	780	324	1315		288	1534		259	1557	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.60	0.46	0.23	0.18	0.41		0.90	0.53		0.29	0.41	

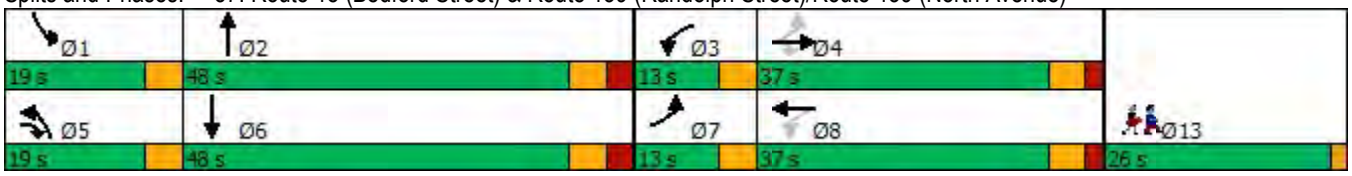
Intersection Summary
Cycle Length: 143

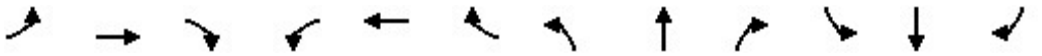
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	18%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	17.0
Pedestrian Calls (#/hr)	2
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 99.8
Natural Cycle: 95
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 57: Route 18 (Bedford Street) & Route 139 (Randolph Street)/Route 139 (North Avenue)

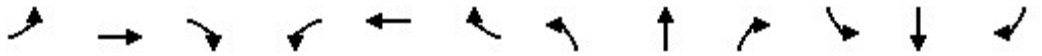




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	260	165	54	421	67	247	722	57	63	443	85
Future Volume (vph)	134	260	165	54	421	67	247	722	57	63	443	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	15	12	13	11	12	12	12	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1616	1766	1531	1656	3766		1829	3307		1641	3345	
Flt Permitted	0.21	1.00	1.00	0.41	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	352	1766	1531	715	3766		1829	3307		1641	3345	
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.95	0.95	0.95	0.83	0.83	0.83
Adj. Flow (vph)	146	283	179	59	463	74	260	760	60	76	534	102
RTOR Reduction (vph)	0	0	66	0	9	0	0	4	0	0	11	0
Lane Group Flow (vph)	146	283	113	59	528	0	260	816	0	76	625	0
Heavy Vehicles (%)	8%	4%	2%	9%	3%	5%	2%	4%	9%	10%	5%	7%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	35.1	25.6	41.4	28.5	22.3		15.8	35.8		8.7	28.7	
Effective Green, g (s)	35.1	27.6	41.4	28.5	24.3		15.8	38.8		8.7	31.7	
Actuated g/C Ratio	0.34	0.27	0.40	0.28	0.24		0.15	0.38		0.08	0.31	
Clearance Time (s)	4.0	6.0	4.0	4.0	6.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	237	475	617	255	891		281	1250		139	1033	
v/s Ratio Prot	c0.06	c0.16	0.03	0.01	0.14		c0.14	c0.25		0.05	0.19	
v/s Ratio Perm	0.15		0.05	0.05								
v/c Ratio	0.62	0.60	0.18	0.23	0.59		0.93	0.65		0.55	0.60	
Uniform Delay, d1	25.6	32.6	19.7	28.0	34.8		42.8	26.3		45.1	30.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.7	2.0	0.1	0.5	1.1		34.3	1.2		4.3	1.0	
Delay (s)	30.3	34.7	19.9	28.4	35.8		77.1	27.6		49.4	31.1	
Level of Service	C	C	B	C	D		E	C		D	C	
Approach Delay (s)		29.2			35.1			39.5			33.1	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	35.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	102.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	421	189	69	440	83	190	598	41	115	747	122
Future Volume (vph)	116	421	189	69	440	83	190	598	41	115	747	122
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.976			0.990			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1678	1818	1561	1805	3843	0	1829	3350	0	1787	3499	0
Flt Permitted	0.215			0.150			0.950			0.950		
Satd. Flow (perm)	380	1818	1561	285	3843	0	1829	3350	0	1787	3499	0
Satd. Flow (RTOR)			78		14			5			13	
Adj. Flow (vph)	122	443	199	77	489	92	207	650	45	122	795	130
Lane Group Flow (vph)	122	443	199	77	581	0	207	695	0	122	925	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	5	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	22.5	10.0	10.0	22.5		10.0	22.5		10.0	22.5	
Total Split (s)	13.0	37.0	19.0	13.0	37.0		19.0	48.0		19.0	48.0	
Total Split (%)	9.1%	25.9%	13.3%	9.1%	25.9%		13.3%	33.6%		13.3%	33.6%	
Maximum Green (s)	9.0	31.0	15.0	9.0	31.0		15.0	41.0		15.0	41.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0	0.0	0.0	2.0		0.0	3.0		0.0	3.0	
Lost Time Adjust (s)	0.0	-2.0	0.0	0.0	-2.0		0.0	-3.0		0.0	-3.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.51	0.83	0.26	0.38	0.57		0.84	0.56		0.62	0.76	
Control Delay	36.1	54.3	12.3	32.0	39.4		79.8	32.8		66.2	39.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.1	54.3	12.3	32.0	39.4		79.8	32.8		66.2	39.0	
Queue Length 50th (ft)	57	302	50	35	182		150	205		86	301	
Queue Length 95th (ft)	137	#667	99	91	319		#381	367		#190	508	
Internal Link Dist (ft)		172			116			480			2832	
Turn Bay Length (ft)	110		90	75			290			170		
Base Capacity (vph)	239	536	758	220	1143		245	1320		239	1383	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.51	0.83	0.26	0.35	0.51		0.84	0.53		0.51	0.67	

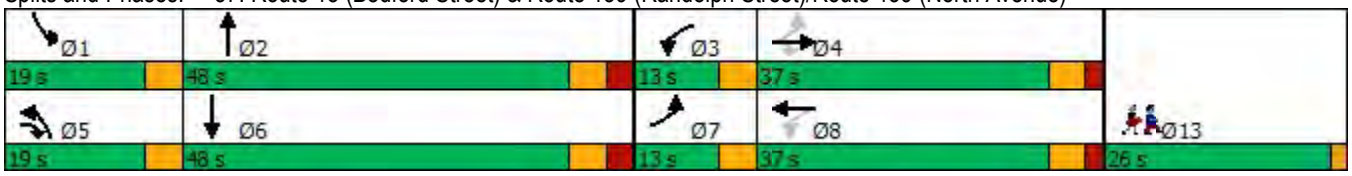
Intersection Summary
Cycle Length: 143

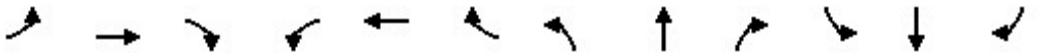
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	18%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	17.0
Pedestrian Calls (#/hr)	1
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 114.3
Natural Cycle: 125
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 57: Route 18 (Bedford Street) & Route 139 (Randolph Street)/Route 139 (North Avenue)

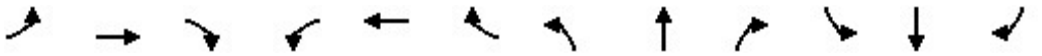




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	421	189	69	440	83	190	598	41	115	747	122
Future Volume (vph)	116	421	189	69	440	83	190	598	41	115	747	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	15	12	13	11	12	12	12	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1678	1818	1561	1805	3844		1829	3351		1787	3499	
Flt Permitted	0.21	1.00	1.00	0.15	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	379	1818	1561	284	3844		1829	3351		1787	3499	
Peak-hour factor, PHF	0.95	0.95	0.95	0.90	0.90	0.90	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	122	443	199	77	489	92	207	650	45	122	795	130
RTOR Reduction (vph)	0	0	47	0	10	0	0	3	0	0	9	0
Lane Group Flow (vph)	122	443	152	77	571	0	207	692	0	122	916	0
Heavy Vehicles (%)	4%	1%	0%	0%	1%	0%	2%	3%	5%	1%	1%	1%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	40.7	31.7	47.0	35.7	29.2		15.3	39.0		12.6	36.3	
Effective Green, g (s)	40.7	33.7	47.0	35.7	31.2		15.3	42.0		12.6	39.3	
Actuated g/C Ratio	0.35	0.29	0.40	0.31	0.27		0.13	0.36		0.11	0.34	
Clearance Time (s)	4.0	6.0	4.0	4.0	6.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	232	525	629	171	1028		239	1207		193	1179	
v/s Ratio Prot	c0.04	c0.24	0.03	0.02	0.15		c0.11	c0.21		0.07	c0.26	
v/s Ratio Perm	0.14		0.07	0.11								
v/c Ratio	0.53	0.84	0.24	0.45	0.56		0.87	0.57		0.63	0.78	
Uniform Delay, d1	27.9	39.0	23.0	31.3	36.7		49.6	30.1		49.8	34.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	11.8	0.2	1.9	0.7		26.3	0.7		6.6	3.3	
Delay (s)	30.1	50.8	23.2	33.2	37.4		76.0	30.7		56.4	38.0	
Level of Service	C	D	C	C	D		E	C		E	D	
Approach Delay (s)		40.3			36.9			41.1			40.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	39.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	116.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	247	363	36	23	387	28	127	443	5	39	469	235
Future Volume (vph)	247	363	36	23	387	28	127	443	5	39	469	235
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.990			0.998			0.950	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1728	1818	1473	1805	3885	0	1811	3449	0	1787	3396	0
Flt Permitted	0.285			0.310			0.950			0.950		
Satd. Flow (perm)	518	1818	1473	589	3885	0	1811	3449	0	1787	3396	0
Satd. Flow (RTOR)			76		5			1			63	
Adj. Flow (vph)	268	395	39	25	425	31	134	466	5	43	515	258
Lane Group Flow (vph)	268	395	39	25	456	0	134	471	0	43	773	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	5	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	22.5	10.0	10.0	22.5		10.0	22.5		10.0	22.5	
Total Split (s)	13.0	37.0	19.0	13.0	37.0		19.0	48.0		19.0	48.0	
Total Split (%)	9.1%	25.9%	13.3%	9.1%	25.9%		13.3%	33.6%		13.3%	33.6%	
Maximum Green (s)	9.0	31.0	15.0	9.0	31.0		15.0	41.0		15.0	41.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0	0.0	0.0	2.0		0.0	3.0		0.0	3.0	
Lost Time Adjust (s)	0.0	-2.0	0.0	0.0	-2.0		0.0	-3.0		0.0	-3.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.86	0.66	0.05	0.09	0.48		0.57	0.33		0.29	0.69	
Control Delay	54.3	39.6	0.4	25.7	35.0		56.5	24.2		55.6	32.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	54.3	39.6	0.4	25.7	35.0		56.5	24.2		55.6	32.4	
Queue Length 50th (ft)	112	214	0	9	118		81	113		26	208	
Queue Length 95th (ft)	#448	#564	2	39	251		#215	230		79	385	
Internal Link Dist (ft)		172			116			480			2832	
Turn Bay Length (ft)	110		90	75			290			170		
Base Capacity (vph)	312	648	813	320	1389		293	1655		289	1648	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.86	0.61	0.05	0.08	0.33		0.46	0.28		0.15	0.47	

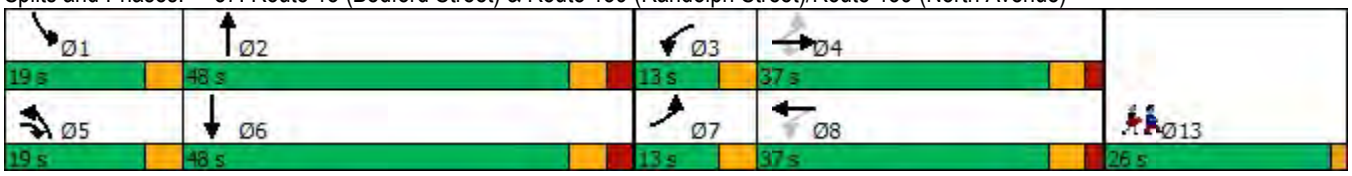
Intersection Summary
Cycle Length: 143

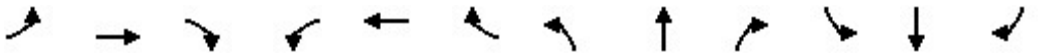
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	18%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	17.0
Pedestrian Calls (#/hr)	4
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 98.8
Natural Cycle: 95
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 57: Route 18 (Bedford Street) & Route 139 (Randolph Street)/Route 139 (North Avenue)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	247	363	36	23	387	28	127	443	5	39	469	235
Future Volume (vph)	247	363	36	23	387	28	127	443	5	39	469	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	15	12	13	11	12	12	12	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1728	1818	1473	1805	3884		1811	3450		1787	3395	
Flt Permitted	0.28	1.00	1.00	0.31	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	518	1818	1473	588	3884		1811	3450		1787	3395	
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.95	0.95	0.95	0.91	0.91	0.91
Adj. Flow (vph)	268	395	39	25	425	31	134	466	5	43	515	258
RTOR Reduction (vph)	0	0	23	0	4	0	0	1	0	0	43	0
Lane Group Flow (vph)	268	395	16	25	452	0	134	470	0	43	730	0
Heavy Vehicles (%)	1%	1%	6%	0%	1%	4%	3%	1%	0%	1%	1%	1%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	38.0	30.3	43.1	28.1	24.4		12.8	38.2		5.0	30.4	
Effective Green, g (s)	38.0	32.3	43.1	28.1	26.4		12.8	41.2		5.0	33.4	
Actuated g/C Ratio	0.37	0.31	0.42	0.27	0.26		0.12	0.40		0.05	0.32	
Clearance Time (s)	4.0	6.0	4.0	4.0	6.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	302	567	613	203	990		223	1373		86	1095	
v/s Ratio Prot	c0.08	0.22	0.00	0.00	0.12		c0.07	0.14		0.02	c0.22	
v/s Ratio Perm	c0.24		0.01	0.03								
v/c Ratio	0.89	0.70	0.03	0.12	0.46		0.60	0.34		0.50	0.67	
Uniform Delay, d1	27.9	31.3	17.8	28.4	32.5		42.9	21.7		48.0	30.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	25.3	3.7	0.0	0.3	0.3		4.5	0.2		4.5	1.6	
Delay (s)	53.2	35.0	17.8	28.6	32.8		47.4	21.9		52.5	31.8	
Level of Service	D	D	B	C	C		D	C		D	C	
Approach Delay (s)		41.0			32.6			27.5			32.9	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	103.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

North Avenue at Adams Street (Route 58)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	301	81	14	308	65	156	304	17	51	141	24
Future Volume (vph)	19	301	81	14	308	65	156	304	17	51	141	24
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.973			0.977			0.995			0.985	
Flt Protected		0.998			0.998			0.984			0.988	
Satd. Flow (prot)	0	1963	0	0	2050	0	0	1823	0	0	1797	0
Flt Permitted		0.963			0.980			0.794			0.823	
Satd. Flow (perm)	0	1894	0	0	2013	0	0	1471	0	0	1497	0
Satd. Flow (RTOR)		13			11			2			7	
Adj. Flow (vph)	20	314	84	16	358	76	170	330	18	68	188	32
Lane Group Flow (vph)	0	418	0	0	450	0	0	518	0	0	288	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	42.0	42.0		42.0	42.0		42.0	42.0		42.0	42.0	
Total Split (%)	39.6%	39.6%		39.6%	39.6%		39.6%	39.6%		39.6%	39.6%	
Maximum Green (s)	36.0	36.0		36.0	36.0		36.0	36.0		36.0	36.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0			-2.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.68			0.69			0.67			0.36	
Control Delay		28.2			28.4			22.6			15.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		28.2			28.4			22.6			15.7	
Queue Length 50th (ft)		144			157			137			59	
Queue Length 95th (ft)		328			329			#566			184	
Internal Link Dist (ft)		1381			2062			611			847	
Turn Bay Length (ft)												
Base Capacity (vph)		1007			1069			778			794	
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		0.42			0.42			0.67			0.36	

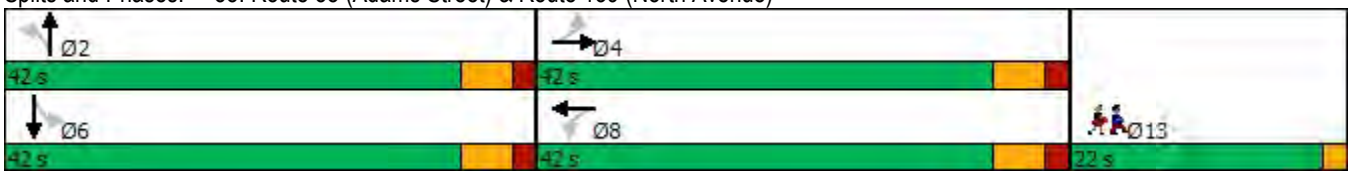
Intersection Summary
Cycle Length: 106

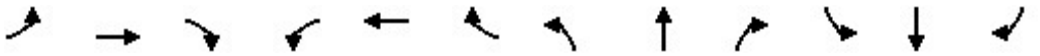
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	21%
Maximum Green (s)	20.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	13.0
Pedestrian Calls (#/hr)	5
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 74.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 58: Route 58 (Adams Street) & Route 139 (North Avenue)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	301	81	14	308	65	156	304	17	51	141	24
Future Volume (vph)	19	301	81	14	308	65	156	304	17	51	141	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	15	16	16	16	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			0.98			1.00			0.98	
Flt Protected		1.00			1.00			0.98			0.99	
Satd. Flow (prot)		1962			2051			1824			1798	
Flt Permitted		0.96			0.98			0.79			0.82	
Satd. Flow (perm)		1895			2013			1471			1498	
Peak-hour factor, PHF	0.96	0.96	0.96	0.86	0.86	0.86	0.92	0.92	0.92	0.75	0.75	0.75
Adj. Flow (vph)	20	314	84	16	358	76	170	330	18	68	188	32
RTOR Reduction (vph)	0	9	0	0	8	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	409	0	0	442	0	0	517	0	0	285	0
Heavy Vehicles (%)	11%	3%	3%	0%	2%	5%	1%	2%	12%	2%	3%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		21.7			21.7			37.4			37.4	
Effective Green, g (s)		23.7			23.7			39.4			39.4	
Actuated g/C Ratio		0.31			0.31			0.52			0.52	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		591			628			763			777	
v/s Ratio Prot												
v/s Ratio Perm		0.22			c0.22			c0.35			0.19	
v/c Ratio		0.69			0.70			0.68			0.37	
Uniform Delay, d1		22.9			23.0			13.5			10.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.5			3.6			2.4			0.3	
Delay (s)		26.4			26.6			15.9			11.1	
Level of Service		C			C			B			B	
Approach Delay (s)		26.4			26.6			15.9			11.1	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	75.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	386	159	39	415	50	109	265	12	65	389	21
Future Volume (vph)	17	386	159	39	415	50	109	265	12	65	389	21
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.987			0.996			0.994	
Flt Protected		0.999			0.996			0.986			0.993	
Satd. Flow (prot)	0	1995	0	0	2095	0	0	1855	0	0	1860	0
Flt Permitted		0.981			0.891			0.708			0.897	
Satd. Flow (perm)	0	1959	0	0	1875	0	0	1332	0	0	1680	0
Satd. Flow (RTOR)		21			6			2			2	
Adj. Flow (vph)	18	415	171	41	441	53	120	291	13	71	423	23
Lane Group Flow (vph)	0	604	0	0	535	0	0	424	0	0	517	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	42.0	42.0		42.0	42.0		42.0	42.0		42.0	42.0	
Total Split (%)	39.6%	39.6%		39.6%	39.6%		39.6%	39.6%		39.6%	39.6%	
Maximum Green (s)	36.0	36.0		36.0	36.0		36.0	36.0		36.0	36.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0			-2.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.79			0.74			0.67			0.65	
Control Delay		31.3			29.8			26.7			24.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		31.3			29.8			26.7			24.4	
Queue Length 50th (ft)		233			205			145			175	
Queue Length 95th (ft)		#556			#462			#454			#511	
Internal Link Dist (ft)		1381			2062			611			847	
Turn Bay Length (ft)												
Base Capacity (vph)		942			894			634			799	
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		0.64			0.60			0.67			0.65	

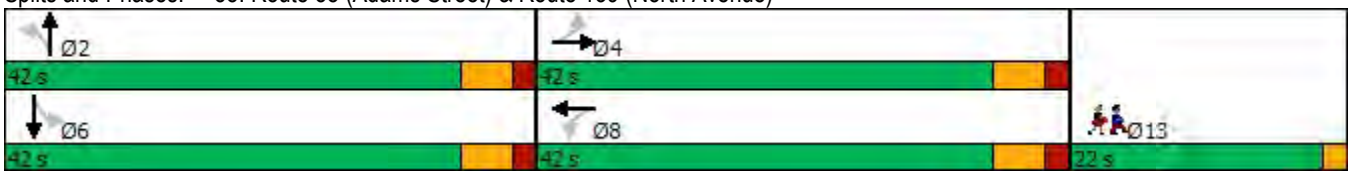
Intersection Summary
Cycle Length: 106

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	21%
Maximum Green (s)	20.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	13.0
Pedestrian Calls (#/hr)	4
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 81.8
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 58: Route 58 (Adams Street) & Route 139 (North Avenue)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	386	159	39	415	50	109	265	12	65	389	21
Future Volume (vph)	17	386	159	39	415	50	109	265	12	65	389	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	15	16	16	16	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.96			0.99			1.00			0.99	
Flt Protected		1.00			1.00			0.99			0.99	
Satd. Flow (prot)		1993			2095			1855			1860	
Flt Permitted		0.98			0.89			0.71			0.90	
Satd. Flow (perm)		1958			1874			1333			1681	
Peak-hour factor, PHF	0.93	0.93	0.93	0.94	0.94	0.94	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	18	415	171	41	441	53	120	291	13	71	423	23
RTOR Reduction (vph)	0	13	0	0	4	0	0	1	0	0	1	0
Lane Group Flow (vph)	0	591	0	0	531	0	0	423	0	0	516	0
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	2%	0%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		29.3			29.3			36.8			36.8	
Effective Green, g (s)		31.3			31.3			38.8			38.8	
Actuated g/C Ratio		0.38			0.38			0.47			0.47	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		736			705			621			783	
v/s Ratio Prot												
v/s Ratio Perm		c0.30			0.28			c0.32			0.31	
v/c Ratio		0.80			0.75			0.68			0.66	
Uniform Delay, d1		23.2			22.6			17.4			17.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		6.3			4.6			3.1			2.0	
Delay (s)		29.5			27.2			20.4			19.1	
Level of Service		C			C			C			B	
Approach Delay (s)		29.5			27.2			20.4			19.1	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	83.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	349	163	28	323	55	141	261	26	92	275	34
Future Volume (vph)	15	349	163	28	323	55	141	261	26	92	275	34
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.958			0.982			0.992			0.989	
Flt Protected		0.999			0.997			0.984			0.989	
Satd. Flow (prot)	0	1987	0	0	2103	0	0	1849	0	0	1846	0
Flt Permitted		0.982			0.926			0.706			0.807	
Satd. Flow (perm)	0	1953	0	0	1953	0	0	1326	0	0	1506	0
Satd. Flow (RTOR)		24			8			3			5	
Adj. Flow (vph)	18	415	194	29	340	58	150	278	28	98	293	36
Lane Group Flow (vph)	0	627	0	0	427	0	0	456	0	0	427	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	42.0	42.0		42.0	42.0		42.0	42.0		42.0	42.0	
Total Split (%)	39.6%	39.6%		39.6%	39.6%		39.6%	39.6%		39.6%	39.6%	
Maximum Green (s)	36.0	36.0		36.0	36.0		36.0	36.0		36.0	36.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0			-2.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.80			0.55			0.73			0.60	
Control Delay		31.7			23.3			29.9			24.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		31.7			23.3			29.9			24.0	
Queue Length 50th (ft)		246			149			171			146	
Queue Length 95th (ft)		#497			335			#507			#411	
Internal Link Dist (ft)		1381			2062			611			847	
Turn Bay Length (ft)												
Base Capacity (vph)		926			917			621			707	
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		0.68			0.47			0.73			0.60	

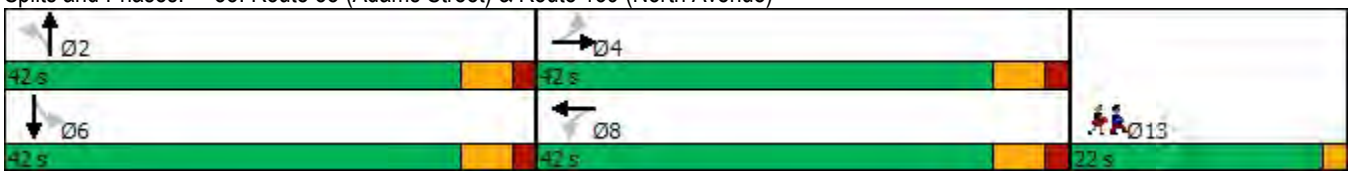
Intersection Summary
Cycle Length: 106

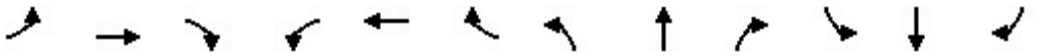
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	21%
Maximum Green (s)	20.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	13.0
Pedestrian Calls (#/hr)	5
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 82.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 58: Route 58 (Adams Street) & Route 139 (North Avenue)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	349	163	28	323	55	141	261	26	92	275	34
Future Volume (vph)	15	349	163	28	323	55	141	261	26	92	275	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	15	16	16	16	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.96			0.98			0.99			0.99	
Flt Protected		1.00			1.00			0.98			0.99	
Satd. Flow (prot)		1987			2101			1848			1844	
Flt Permitted		0.98			0.93			0.71			0.81	
Satd. Flow (perm)		1955			1952			1326			1506	
Peak-hour factor, PHF	0.84	0.84	0.84	0.95	0.95	0.95	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	18	415	194	29	340	58	150	278	28	98	293	36
RTOR Reduction (vph)	0	15	0	0	5	0	0	2	0	0	3	0
Lane Group Flow (vph)	0	612	0	0	422	0	0	454	0	0	424	0
Heavy Vehicles (%)	0%	1%	0%	4%	0%	0%	1%	0%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		30.5			30.5			36.7			36.7	
Effective Green, g (s)		32.5			32.5			38.7			38.7	
Actuated g/C Ratio		0.39			0.39			0.46			0.46	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		753			752			608			691	
v/s Ratio Prot												
v/s Ratio Perm		c0.31			0.22			c0.34			0.28	
v/c Ratio		0.81			0.56			0.75			0.61	
Uniform Delay, d1		23.2			20.3			18.8			17.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		6.7			1.0			5.0			1.6	
Delay (s)		29.9			21.3			23.8			18.8	
Level of Service		C			C			C			B	
Approach Delay (s)		29.9			21.3			23.8			18.8	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	84.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

North Avenue at Salem Street and Plain Street (Route 139)

Intersection	
Int Delay, s/veh	115.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	189	307	156	22	216	5	183	16	30	3	15	59
Future Vol, veh/h	189	307	156	22	216	5	183	16	30	3	15	59
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	88	88	80	85	85	85	80	80	80
Heavy Vehicles, %	1	6	4	9	3	0	3	0	3	0	0	5
Mvmt Flow	203	330	168	25	245	6	215	19	35	4	19	74

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	251	0	0	498	0	0	1165	1121	414	1145	1202	248
Stage 1	-	-	-	-	-	-	820	820	-	298	298	-
Stage 2	-	-	-	-	-	-	345	301	-	847	904	-
Critical Hdwy	4.11	-	-	4.19	-	-	7.13	6.5	6.23	7.1	6.5	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.281	-	-	3.527	4	3.327	3.5	4	3.345
Pot Cap-1 Maneuver	1320	-	-	1031	-	-	~ 170	208	636	178	186	783
Stage 1	-	-	-	-	-	-	368	392	-	715	671	-
Stage 2	-	-	-	-	-	-	668	669	-	359	358	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1320	-	-	1031	-	-	~ 113	158	636	125	141	783
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 113	158	-	125	141	-
Stage 1	-	-	-	-	-	-	288	307	-	559	652	-
Stage 2	-	-	-	-	-	-	571	650	-	249	280	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.4	0.8	$ 563.9	17.9
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	130	1320	-	-	1031	-	-	374
HCM Lane V/C Ratio	2.072	0.154	-	-	0.024	-	-	0.257
HCM Control Delay (s)	$ 563.9	8.2	0	-	8.6	0	-	17.9
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	22	0.5	-	-	0.1	-	-	1

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

Intersection	
Int Delay, s/veh	220

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	80	254	274	41	295	12	239	22	33	8	31	198
Future Vol, veh/h	80	254	274	41	295	12	239	22	33	8	31	198
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	96	96	96	88	88	88	85	85	85
Heavy Vehicles, %	1	2	1	0	1	0	2	0	0	0	0	0
Mvmt Flow	87	276	298	43	307	13	272	25	38	9	36	233

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	320	0	0	574	0	0	1133	1005	425	1031	1148	314
Stage 1	-	-	-	-	-	-	599	599	-	400	400	-
Stage 2	-	-	-	-	-	-	534	406	-	631	748	-
Critical Hdwy	4.11	-	-	4.1	-	-	7.12	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.2	-	-	3.518	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1246	-	-	1009	-	-	~ 180	243	634	213	200	731
Stage 1	-	-	-	-	-	-	488	494	-	630	605	-
Stage 2	-	-	-	-	-	-	530	601	-	472	423	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1246	-	-	1009	-	-	~ 91	206	634	161	169	731
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 91	206	-	161	169	-
Stage 1	-	-	-	-	-	-	435	441	-	562	574	-
Stage 2	-	-	-	-	-	-	321	570	-	374	377	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	1	$ 1054.7	23.2
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	106	1246	-	-	1009	-	-	470
HCM Lane V/C Ratio	3.152	0.07	-	-	0.042	-	-	0.593
HCM Control Delay (s)	$ 1054.7	8.1	0	-	8.7	0	-	23.2
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	32.4	0.2	-	-	0.1	-	-	3.8

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

Intersection	
Int Delay, s/veh	118.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	78	241	237	42	265	4	217	21	27	2	20	61
Future Vol, veh/h	78	241	237	42	265	4	217	21	27	2	20	61
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	92	92	92	83	83	83	80	80	80
Heavy Vehicles, %	1	1	0	2	0	0	1	0	0	0	0	0
Mvmt Flow	94	290	286	46	288	4	261	25	33	3	25	76

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	292	0	0	576	0	0	1054	1005	433	1032	1146	290
Stage 1	-	-	-	-	-	-	621	621	-	382	382	-
Stage 2	-	-	-	-	-	-	433	384	-	650	764	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.11	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.509	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1275	-	-	997	-	-	~ 205	243	627	213	201	754
Stage 1	-	-	-	-	-	-	477	482	-	645	616	-
Stage 2	-	-	-	-	-	-	603	615	-	461	416	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1275	-	-	997	-	-	~ 143	203	627	160	168	754
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 143	203	-	160	168	-
Stage 1	-	-	-	-	-	-	423	427	-	571	582	-
Stage 2	-	-	-	-	-	-	490	581	-	364	369	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	1.2	$ 522.6	17.5
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	159	1275	-	-	997	-	-	391
HCM Lane V/C Ratio	2.008	0.074	-	-	0.046	-	-	0.265
HCM Control Delay (s)	$ 522.6	8	0	-	8.8	0	-	17.5
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	24.9	0.2	-	-	0.1	-	-	1.1

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

Salem Street at Spruce Street

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	6	6	209	69	0
Future Vol, veh/h	0	6	6	209	69	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	79	79	70	70
Heavy Vehicles, %	0	17	0	1	4	0
Mvmt Flow	0	7	8	265	99	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	99	99	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.37	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.453	2.2	-	-	-
Pot Cap-1 Maneuver	0	917	1507	-	-	0
Stage 1	0	-	-	-	-	0
Stage 2	0	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	917	1507	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1507	-	917	-
HCM Lane V/C Ratio	0.005	-	0.007	-
HCM Control Delay (s)	7.4	0	9	-
HCM Lane LOS	A	A	A	-
HCM 95th %tile Q(veh)	0	-	0	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	77	0	0	209	69	45
Future Vol, veh/h	77	0	0	209	69	45
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	87	87	79	79	70	70
Heavy Vehicles, %	0	0	0	1	4	9
Mvmt Flow	89	0	0	265	99	64

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	396	-	-	0	-	0
Stage 1	131	-	-	-	-	-
Stage 2	265	-	-	-	-	-
Critical Hdwy	6.4	-	-	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	-	-	-	-	-
Pot Cap-1 Maneuver	613	0	0	-	-	-
Stage 1	900	0	0	-	-	-
Stage 2	784	0	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	613	-	-	-	-	-
Mov Cap-2 Maneuver	613	-	-	-	-	-
Stage 1	900	-	-	-	-	-
Stage 2	784	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	613	-	-
HCM Lane V/C Ratio	-	0.144	-	-
HCM Control Delay (s)	-	11.9	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.5	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	9	14	87	227	0
Future Vol, veh/h	0	9	14	87	227	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	90	90	91	91
Heavy Vehicles, %	0	0	0	2	0	1
Mvmt Flow	0	11	16	97	249	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	249	249	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	795	1328	-	-	0
Stage 1	0	-	-	-	-	0
Stage 2	0	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	795	1328	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	1.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1328	-	795	-
HCM Lane V/C Ratio	0.012	-	0.014	-
HCM Control Delay (s)	7.7	0	9.6	-
HCM Lane LOS	A	A	A	-
HCM 95th %tile Q(veh)	0	-	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	53	0	0	87	227	122
Future Vol, veh/h	53	0	0	87	227	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	90	90	91	91
Heavy Vehicles, %	0	0	0	2	0	1
Mvmt Flow	65	0	0	97	249	134

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	413	-	-	0	-	0
Stage 1	316	-	-	-	-	-
Stage 2	97	-	-	-	-	-
Critical Hdwy	6.4	-	-	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	-	-	-	-	-
Pot Cap-1 Maneuver	599	0	0	-	-	-
Stage 1	744	0	0	-	-	-
Stage 2	932	0	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	599	-	-	-	-	-
Mov Cap-2 Maneuver	599	-	-	-	-	-
Stage 1	744	-	-	-	-	-
Stage 2	932	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	599	-	-
HCM Lane V/C Ratio	-	0.108	-	-
HCM Control Delay (s)	-	11.7	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.4	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	10	9	93	83	0
Future Vol, veh/h	0	10	9	93	83	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	80	80	85	85
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	0	16	11	116	98	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	98	98	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	963	1508	-	-	0
Stage 1	0	-	-	-	-	0
Stage 2	0	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	963	1508	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	0.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1508	-	963	-
HCM Lane V/C Ratio	0.007	-	0.016	-
HCM Control Delay (s)	7.4	0	8.8	-
HCM Lane LOS	A	A	A	-
HCM 95th %tile Q(veh)	0	-	0.1	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	38	0	0	93	83	63
Future Vol, veh/h	38	0	0	93	83	63
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	63	63	80	80	85	85
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	60	0	0	116	98	74

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	251	-	-	0	-	0
Stage 1	135	-	-	-	-	-
Stage 2	116	-	-	-	-	-
Critical Hdwy	6.4	-	-	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	-	-	-	-	-
Pot Cap-1 Maneuver	742	0	0	-	-	-
Stage 1	896	0	0	-	-	-
Stage 2	914	0	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	742	-	-	-	-	-
Mov Cap-2 Maneuver	742	-	-	-	-	-
Stage 1	896	-	-	-	-	-
Stage 2	914	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	742	-	-
HCM Lane V/C Ratio	-	0.081	-	-
HCM Control Delay (s)	-	10.3	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.3	-	-

VFW Drive at Union Street

Intersection	
Int Delay, s/veh	3

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	2	25	620	17	35	1	1	3	0	230	4	9
Future Vol, veh/h	2	25	620	17	35	1	1	3	0	230	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	33	33	33	92	92	92
Heavy Vehicles, %	0	8	1	6	0	0	0	0	0	3	50	0
Mvmt Flow	2	28	705	19	40	1	3	9	0	250	4	10

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	41	0	0	28	0	0	118	111	41	115	111	28
Stage 1	-	-	-	-	-	-	79	79	-	32	32	-
Stage 2	-	-	-	-	-	-	39	32	-	83	79	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.5	6.2	7.13	7	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.13	6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.13	6	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4	3.3	3.527	4.45	3.3
Pot Cap-1 Maneuver	1581	-	-	1560	-	-	863	783	1036	859	698	1053
Stage 1	-	-	-	-	-	-	935	833	-	982	782	-
Stage 2	-	-	-	-	-	-	981	872	-	923	744	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1581	-	-	1560	-	-	841	772	1036	842	688	1053
Mov Cap-2 Maneuver	-	-	-	-	-	-	841	772	-	842	688	-
Stage 1	-	-	-	-	-	-	933	823	-	980	780	-
Stage 2	-	-	-	-	-	-	965	870	-	902	735	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0	2.4	9.6	11.2
HCM LOS			A	B

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	788	1581	-	-	1560	-	-	845
HCM Lane V/C Ratio	0.015	0.001	-	-	0.012	-	-	0.313
HCM Control Delay (s)	9.6	7.3	0	-	7.3	0	-	11.2
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	1.3

Intersection	
Int Delay, s/veh	20.8

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	3	55	301	17	65	0	0	2	1	637	0	21
Future Vol, veh/h	3	55	301	17	65	0	0	2	1	637	0	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	85	85	85	38	38	38	96	96	96
Heavy Vehicles, %	0	0	2	0	0	0	0	50	0	1	0	0
Mvmt Flow	3	61	334	20	76	0	0	5	3	664	0	22

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	76	0	0	61	0	0	194	183	76	187	183	61
Stage 1	-	-	-	-	-	-	116	116	-	67	67	-
Stage 2	-	-	-	-	-	-	78	67	-	120	116	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	7	6.2	7.11	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	6	-	6.11	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	6	-	6.11	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.45	3.3	3.509	4	3.3
Pot Cap-1 Maneuver	1536	-	-	1555	-	-	770	633	991	776	715	1010
Stage 1	-	-	-	-	-	-	894	716	-	946	843	-
Stage 2	-	-	-	-	-	-	936	754	-	887	803	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1536	-	-	1555	-	-	744	623	991	760	704	1010
Mov Cap-2 Maneuver	-	-	-	-	-	-	744	623	-	760	704	-
Stage 1	-	-	-	-	-	-	891	707	-	943	840	-
Stage 2	-	-	-	-	-	-	913	752	-	867	793	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0.1	1.5	10.1	35.6
HCM LOS			B	E

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	711	1536	-	-	1555	-	-	766
HCM Lane V/C Ratio	0.011	0.002	-	-	0.013	-	-	0.895
HCM Control Delay (s)	10.1	7.3	0	-	7.3	0	-	35.6
HCM Lane LOS	B	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	11.8

Intersection	
Int Delay, s/veh	5.6

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	3	37	329	10	34	0	0	3	1	321	0	11
Future Vol, veh/h	3	37	329	10	34	0	0	3	1	321	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	85	85	85	33	33	33	92	92	92
Heavy Vehicles, %	0	0	1	0	0	0	0	0	0	1	0	0
Mvmt Flow	3	42	374	12	40	0	0	9	3	349	0	12

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	40	0	0	42	0	0	118	112	40	118	112	42
Stage 1	-	-	-	-	-	-	64	64	-	48	48	-
Stage 2	-	-	-	-	-	-	54	48	-	70	64	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.11	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.11	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.11	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.509	4	3.3
Pot Cap-1 Maneuver	1583	-	-	1580	-	-	863	782	1037	860	782	1034
Stage 1	-	-	-	-	-	-	952	846	-	968	859	-
Stage 2	-	-	-	-	-	-	963	859	-	942	846	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1583	-	-	1580	-	-	846	773	1037	843	773	1034
Mov Cap-2 Maneuver	-	-	-	-	-	-	846	773	-	843	773	-
Stage 1	-	-	-	-	-	-	949	839	-	965	856	-
Stage 2	-	-	-	-	-	-	949	856	-	922	839	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0.1	1.7	9.4	12.4
HCM LOS			A	B

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	826	1583	-	-	1580	-	-	848
HCM Lane V/C Ratio	0.015	0.002	-	-	0.007	-	-	0.426
HCM Control Delay (s)	9.4	7.3	0	-	7.3	0	-	12.4
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	2.1

VFW Drive at Pleasant Street

Intersection	
Int Delay, s/veh	14.8

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	22	12	195	16	5	11	15	645	15	69	237	10
Future Vol, veh/h	22	12	195	16	5	11	15	645	15	69	237	10
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	81	81	81	80	80	80	88	88	88	93	93	93
Heavy Vehicles, %	5	8	3	16	5	11	0	1	0	6	7	10
Mvmt Flow	27	15	241	20	6	14	17	733	17	74	255	11

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	1195	1190	742	1313	1193	261	266	0	0	750	0	0
Stage 1	776	776	-	409	409	-	-	-	-	-	-	-
Stage 2	419	414	-	904	784	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.58	6.23	7.26	6.55	6.31	4.1	-	-	4.16	-	-
Critical Hdwy Stg 1	6.15	5.58	-	6.26	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.58	-	6.26	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.072	3.327	3.644	4.045	3.399	2.2	-	-	2.254	-	-
Pot Cap-1 Maneuver	161	183	414	126	184	756	1310	-	-	841	-	-
Stage 1	386	399	-	592	591	-	-	-	-	-	-	-
Stage 2	606	583	-	313	400	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	139	160	414	44	161	756	1310	-	-	841	-	-
Mov Cap-2 Maneuver	139	160	-	44	161	-	-	-	-	-	-	-
Stage 1	378	390	-	579	530	-	-	-	-	-	-	-
Stage 2	527	523	-	123	391	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	58.9	92.1	0.2	2.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NEL	NET	NER	NBLn1	SBLn1	SWL	SWT	SWR
Capacity (veh/h)	1310	-	-	325	78	841	-	-
HCM Lane V/C Ratio	0.013	-	-	0.87	0.513	0.088	-	-
HCM Control Delay (s)	7.8	0	-	58.9	92.1	9.7	0	-
HCM Lane LOS	A	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0	-	-	8	2.2	0.3	-	-

Intersection	
Int Delay, s/veh	8.9

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	16	8	117	9	8	12	16	319	22	241	654	25
Future Vol, veh/h	16	8	117	9	8	12	16	319	22	241	654	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	81	81	81	86	86	86	96	96	96
Heavy Vehicles, %	0	0	3	0	0	0	0	2	0	2	1	0
Mvmt Flow	18	9	133	11	10	15	19	371	26	251	681	26

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	1631	1631	384	1689	1631	694	707	0	0	397	0	0
Stage 1	422	422	-	1196	1196	-	-	-	-	-	-	-
Stage 2	1209	1209	-	493	435	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.23	7.1	6.5	6.2	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.327	3.5	4	3.3	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	82	103	661	75	103	446	901	-	-	1162	-	-
Stage 1	613	592	-	229	262	-	-	-	-	-	-	-
Stage 2	225	258	-	562	584	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	50	64	661	38	64	446	901	-	-	1162	-	-
Mov Cap-2 Maneuver	50	64	-	38	64	-	-	-	-	-	-	-
Stage 1	596	576	-	223	168	-	-	-	-	-	-	-
Stage 2	131	166	-	430	568	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	51.7	90.8	0.4	2.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NEL	NET	NER	NBLn1	SBLn1	SWL	SWT	SWR
Capacity (veh/h)	901	-	-	227	75	1162	-	-
HCM Lane V/C Ratio	0.021	-	-	0.706	0.477	0.216	-	-
HCM Control Delay (s)	9.1	0	-	51.7	90.8	8.9	0	-
HCM Lane LOS	A	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	4.6	2	0.8	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	16	12	104	11	5	7	9	338	16	110	299	9
Future Vol, veh/h	16	12	104	11	5	7	9	338	16	110	299	9
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	87	87	87	72	72	72	89	89	89	93	93	93
Heavy Vehicles, %	6	8	1	0	0	0	0	1	0	0	1	0
Mvmt Flow	18	14	120	15	7	10	10	380	18	118	322	10

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	981	977	389	1039	981	327	332	0	0	398	0	0
Stage 1	409	409	-	563	563	-	-	-	-	-	-	-
Stage 2	572	568	-	476	418	-	-	-	-	-	-	-
Critical Hdwy	7.16	6.58	6.21	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.16	5.58	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.16	5.58	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.554	4.072	3.309	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	225	245	661	211	251	719	1239	-	-	1172	-	-
Stage 1	611	586	-	514	512	-	-	-	-	-	-	-
Stage 2	498	497	-	574	594	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	195	212	661	148	218	719	1239	-	-	1172	-	-
Mov Cap-2 Maneuver	195	212	-	148	218	-	-	-	-	-	-	-
Stage 1	605	580	-	509	449	-	-	-	-	-	-	-
Stage 2	424	435	-	454	588	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	17.2	24.6	0.2	2.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NEL	NET	NER	NBLn1	SBLn1	SWL	SWT	SWR
Capacity (veh/h)	1239	-	-	446	215	1172	-	-
HCM Lane V/C Ratio	0.008	-	-	0.34	0.149	0.101	-	-
HCM Control Delay (s)	7.9	0	-	17.2	24.6	8.4	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.5	0.5	0.3	-	-

Union Street at North Avenue

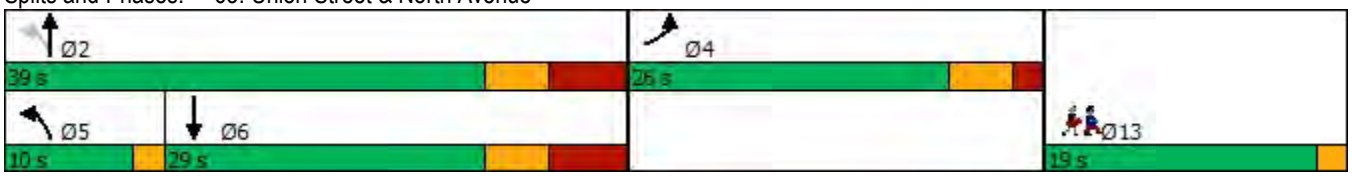


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø13
Lane Configurations							
Traffic Volume (vph)	142	185	145	254	166	58	
Future Volume (vph)	142	185	145	254	166	58	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.924				0.965		
Flt Protected	0.979		0.950				
Satd. Flow (prot)	1883	0	1760	1925	1983	0	
Flt Permitted	0.979		0.440				
Satd. Flow (perm)	1883	0	815	1925	1983	0	
Satd. Flow (RTOR)	76				21		
Adj. Flow (vph)	161	210	158	276	187	65	
Lane Group Flow (vph)	371	0	158	276	252	0	
Turn Type	Prot		pm+pt	NA	NA		
Protected Phases	4		5	2	6		13
Permitted Phases			2				
Detector Phase	4		5	2	6		
Switch Phase							
Minimum Initial (s)	5.0		3.5	5.0	5.0		5.0
Minimum Split (s)	24.0		8.0	22.5	22.5		19.0
Total Split (s)	26.0		10.0	39.0	29.0		19.0
Total Split (%)	31.0%		11.9%	46.4%	34.5%		23%
Maximum Green (s)	20.0		8.0	30.0	20.0		17.0
Yellow Time (s)	4.0		2.0	4.0	4.0		2.0
All-Red Time (s)	2.0		0.0	5.0	5.0		0.0
Lost Time Adjust (s)	-2.0		0.0	-5.0	-5.0		
Total Lost Time (s)	4.0		2.0	4.0	4.0		
Lead/Lag			Lead		Lag		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	None		None	None	None		None
Walk Time (s)							8.0
Flash Dont Walk (s)							9.0
Pedestrian Calls (#/hr)							4
v/c Ratio	0.59		0.28	0.30	0.37		
Control Delay	19.3		10.2	11.1	17.0		
Queue Delay	0.0		0.0	0.0	0.0		
Total Delay	19.3		10.2	11.1	17.0		
Queue Length 50th (ft)	70		19	39	50		
Queue Length 95th (ft)	227		89	156	160		
Internal Link Dist (ft)	4386			2303	3738		
Turn Bay Length (ft)			115				
Base Capacity (vph)	904		584	1353	1043		
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	0.41		0.27	0.20	0.24		

Intersection Summary
Cycle Length: 84

Actuated Cycle Length: 53.2
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 63: Union Street & North Avenue





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	142	185	145	254	166	58
Future Volume (vph)	142	185	145	254	166	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	16	16	13	13	16	16
Total Lost time (s)	4.0		2.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.92		1.00	1.00	0.97	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1882		1760	1925	1983	
Flt Permitted	0.98		0.44	1.00	1.00	
Satd. Flow (perm)	1882		814	1925	1983	
Peak-hour factor, PHF	0.88	0.88	0.92	0.92	0.89	0.89
Adj. Flow (vph)	161	210	158	276	187	65
RTOR Reduction (vph)	53	0	0	0	14	0
Lane Group Flow (vph)	318	0	158	276	238	0
Heavy Vehicles (%)	4%	3%	6%	2%	3%	10%
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases			2			
Actuated Green, G (s)	14.1		20.6	20.6	12.5	
Effective Green, g (s)	16.1		20.6	25.6	17.5	
Actuated g/C Ratio	0.30		0.38	0.47	0.32	
Clearance Time (s)	6.0		2.0	9.0	9.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	562		418	914	643	
v/s Ratio Prot	c0.17		c0.04	0.14	c0.12	
v/s Ratio Perm			0.10			
v/c Ratio	0.57		0.38	0.30	0.37	
Uniform Delay, d1	15.9		11.5	8.7	14.0	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.3		0.6	0.2	0.4	
Delay (s)	17.3		12.0	8.9	14.3	
Level of Service	B		B	A	B	
Approach Delay (s)	17.3			10.0	14.3	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	53.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

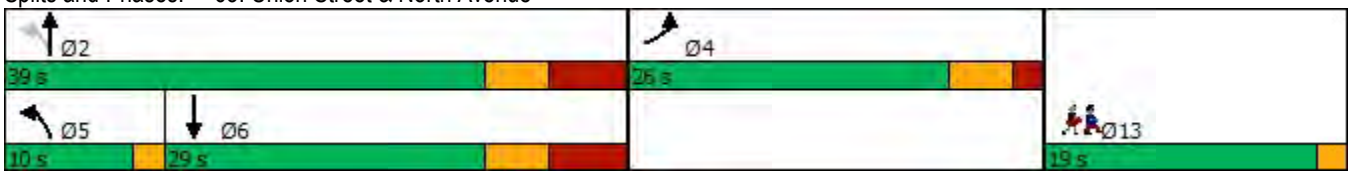


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø13
Lane Configurations							
Traffic Volume (vph)	94	195	223	205	313	96	
Future Volume (vph)	94	195	223	205	313	96	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.909				0.968		
Flt Protected	0.984		0.950				
Satd. Flow (prot)	1895	0	1865	1944	2084	0	
Flt Permitted	0.984		0.239				
Satd. Flow (perm)	1895	0	469	1944	2084	0	
Satd. Flow (RTOR)	120				19		
Adj. Flow (vph)	111	229	232	214	326	100	
Lane Group Flow (vph)	340	0	232	214	426	0	
Turn Type	Prot		pm+pt	NA	NA		
Protected Phases	4		5	2	6		13
Permitted Phases			2				
Detector Phase	4		5	2	6		
Switch Phase							
Minimum Initial (s)	5.0		3.5	5.0	5.0		5.0
Minimum Split (s)	24.0		8.0	22.5	22.5		19.0
Total Split (s)	26.0		10.0	39.0	29.0		19.0
Total Split (%)	31.0%		11.9%	46.4%	34.5%		23%
Maximum Green (s)	20.0		8.0	30.0	20.0		17.0
Yellow Time (s)	4.0		2.0	4.0	4.0		2.0
All-Red Time (s)	2.0		0.0	5.0	5.0		0.0
Lost Time Adjust (s)	-2.0		0.0	-5.0	-5.0		
Total Lost Time (s)	4.0		2.0	4.0	4.0		
Lead/Lag			Lead		Lag		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	None		None	None	None		None
Walk Time (s)							8.0
Flash Dont Walk (s)							9.0
Pedestrian Calls (#/hr)							4
v/c Ratio	0.60		0.48	0.20	0.55		
Control Delay	17.9		13.0	9.7	18.9		
Queue Delay	0.0		0.0	0.0	0.0		
Total Delay	17.9		13.0	9.7	18.9		
Queue Length 50th (ft)	57		26	27	92		
Queue Length 95th (ft)	167		#136	121	287		
Internal Link Dist (ft)	4386			2303	3738		
Turn Bay Length (ft)			115				
Base Capacity (vph)	841		482	1257	973		
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	0.40		0.48	0.17	0.44		

Intersection Summary
Cycle Length: 84

Actuated Cycle Length: 57.2
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 63: Union Street & North Avenue





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	94	195	223	205	313	96
Future Volume (vph)	94	195	223	205	313	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	16	16	13	13	16	16
Total Lost time (s)	4.0		2.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.91		1.00	1.00	0.97	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1895		1865	1944	2085	
Flt Permitted	0.98		0.24	1.00	1.00	
Satd. Flow (perm)	1895		469	1944	2085	
Peak-hour factor, PHF	0.85	0.85	0.96	0.96	0.96	0.96
Adj. Flow (vph)	111	229	232	214	326	100
RTOR Reduction (vph)	90	0	0	0	12	0
Lane Group Flow (vph)	250	0	232	214	414	0
Heavy Vehicles (%)	3%	1%	0%	1%	0%	0%
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases			2			
Actuated Green, G (s)	12.4		26.3	26.3	15.8	
Effective Green, g (s)	14.4		26.3	31.3	20.8	
Actuated g/C Ratio	0.25		0.45	0.54	0.36	
Clearance Time (s)	6.0		2.0	9.0	9.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	470		417	1049	747	
v/s Ratio Prot	c0.13		c0.08	0.11	c0.20	
v/s Ratio Perm			0.17			
v/c Ratio	0.53		0.56	0.20	0.55	
Uniform Delay, d1	18.9		10.9	6.9	14.9	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.2		1.6	0.1	0.9	
Delay (s)	20.0		12.5	7.0	15.8	
Level of Service	C		B	A	B	
Approach Delay (s)	20.0			9.9	15.8	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

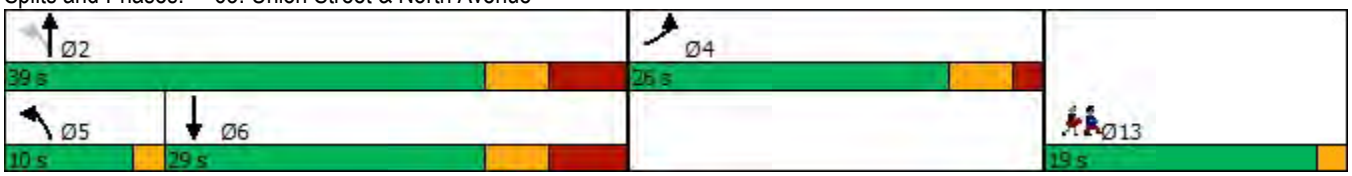


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø13
Lane Configurations							
Traffic Volume (vph)	104	207	196	205	215	63	
Future Volume (vph)	104	207	196	205	215	63	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.910				0.970		
Flt Protected	0.984		0.950				
Satd. Flow (prot)	1903	0	1847	1944	2063	0	
Flt Permitted	0.984		0.381				
Satd. Flow (perm)	1903	0	741	1944	2063	0	
Satd. Flow (RTOR)	115				18		
Adj. Flow (vph)	116	230	220	230	247	72	
Lane Group Flow (vph)	346	0	220	230	319	0	
Turn Type	Prot		pm+pt	NA	NA		
Protected Phases	4		5	2	6		13
Permitted Phases			2				
Detector Phase	4		5	2	6		
Switch Phase							
Minimum Initial (s)	5.0		3.5	5.0	5.0		5.0
Minimum Split (s)	24.0		8.0	22.5	22.5		19.0
Total Split (s)	26.0		10.0	39.0	29.0		19.0
Total Split (%)	31.0%		11.9%	46.4%	34.5%		23%
Maximum Green (s)	20.0		8.0	30.0	20.0		17.0
Yellow Time (s)	4.0		2.0	4.0	4.0		2.0
All-Red Time (s)	2.0		0.0	5.0	5.0		0.0
Lost Time Adjust (s)	-2.0		0.0	-5.0	-5.0		
Total Lost Time (s)	4.0		2.0	4.0	4.0		
Lead/Lag			Lead		Lag		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0
Recall Mode	None		None	None	None		None
Walk Time (s)							8.0
Flash Dont Walk (s)							9.0
Pedestrian Calls (#/hr)							0
v/c Ratio	0.56		0.36	0.21	0.43		
Control Delay	14.4		7.1	6.9	14.2		
Queue Delay	0.0		0.0	0.0	0.0		
Total Delay	14.4		7.1	6.9	14.2		
Queue Length 50th (ft)	54		24	29	64		
Queue Length 95th (ft)	133		64	72	132		
Internal Link Dist (ft)	4386			2303	3738		
Turn Bay Length (ft)			115				
Base Capacity (vph)	913		622	1381	1055		
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	0.38		0.35	0.17	0.30		

Intersection Summary
Cycle Length: 84

Actuated Cycle Length: 50.5
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 63: Union Street & North Avenue





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	104	207	196	205	215	63
Future Volume (vph)	104	207	196	205	215	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	16	16	13	13	16	16
Total Lost time (s)	4.0		2.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.91		1.00	1.00	0.97	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1902		1847	1944	2062	
Flt Permitted	0.98		0.38	1.00	1.00	
Satd. Flow (perm)	1902		741	1944	2062	
Peak-hour factor, PHF	0.90	0.90	0.89	0.89	0.87	0.87
Adj. Flow (vph)	116	230	220	230	247	72
RTOR Reduction (vph)	83	0	0	0	12	0
Lane Group Flow (vph)	263	0	220	230	307	0
Heavy Vehicles (%)	4%	0%	1%	1%	1%	2%
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases			2			
Actuated Green, G (s)	12.1		23.0	23.0	13.0	
Effective Green, g (s)	14.1		23.0	28.0	18.0	
Actuated g/C Ratio	0.28		0.46	0.56	0.36	
Clearance Time (s)	6.0		2.0	9.0	9.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	535		516	1086	740	
v/s Ratio Prot	c0.14		c0.07	0.12	c0.15	
v/s Ratio Perm			0.13			
v/c Ratio	0.49		0.43	0.21	0.42	
Uniform Delay, d1	15.0		8.6	5.5	12.1	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.7		0.6	0.1	0.4	
Delay (s)	15.7		9.2	5.6	12.5	
Level of Service	B		A	A	B	
Approach Delay (s)	15.7			7.4	12.5	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	50.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Webster Street at East Water Street (Route 123)

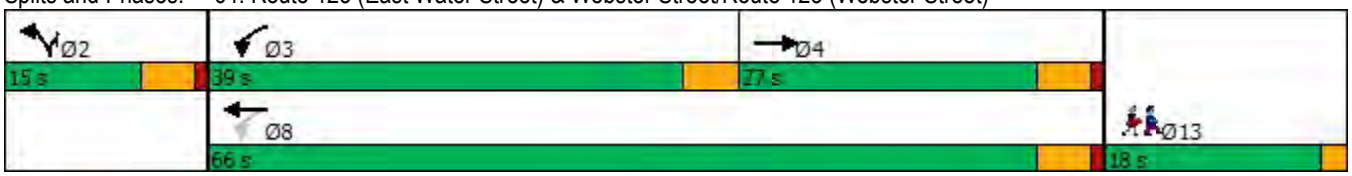


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø13
Lane Configurations							
Traffic Volume (vph)	275	2	311	209	0	644	
Future Volume (vph)	275	2	311	209	0	644	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.999					0.850	
Flt Protected			0.950				
Satd. Flow (prot)	2008	0	1631	1733	1837	1583	
Flt Permitted			0.261				
Satd. Flow (perm)	2008	0	448	1733	1837	1583	
Satd. Flow (RTOR)						800	
Adj. Flow (vph)	382	3	366	246	0	749	
Lane Group Flow (vph)	385	0	366	246	0	749	
Turn Type	NA		pm+pt	NA	Prot	Prot	
Protected Phases	4		3	8	2	2	13
Permitted Phases			8				
Detector Phase	4		3	8	2	2	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0		10.0	10.0	10.0	10.0	18.0
Total Split (s)	27.0		39.0	66.0	15.0	15.0	18.0
Total Split (%)	27.3%		39.4%	66.7%	15.2%	15.2%	18%
Maximum Green (s)	22.0		35.0	61.0	10.0	10.0	16.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0		0.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0		0.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	None	None	None	None
Walk Time (s)							6.0
Flash Dont Walk (s)							10.0
Pedestrian Calls (#/hr)							3
v/c Ratio	0.61		0.63	0.22		0.80	
Control Delay	25.2		11.9	5.8		9.8	
Queue Delay	0.0		0.0	0.0		0.0	
Total Delay	25.2		11.9	5.8		9.8	
Queue Length 50th (ft)	94		38	23		0	
Queue Length 95th (ft)	238		154	93		47	
Internal Link Dist (ft)	862			387	1760		
Turn Bay Length (ft)			210			110	
Base Capacity (vph)	862		1095	1617		960	
Starvation Cap Reductn	0		1	0		0	
Spillback Cap Reductn	0		0	0		0	
Storage Cap Reductn	0		0	0		0	
Reduced v/c Ratio	0.45		0.33	0.15		0.78	

Intersection Summary
Cycle Length: 99

Actuated Cycle Length: 58.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 64: Route 123 (East Water Street) & Webster Street/Route 123 (Webster Street)





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	275	2	311	209	0	644
Future Volume (vph)	275	2	311	209	0	644
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	15	16	11	11	11	12
Total Lost time (s)	4.0		4.0	4.0		4.0
Lane Util. Factor	1.00		1.00	1.00		1.00
Frt	1.00		1.00	1.00		0.85
Flt Protected	1.00		0.95	1.00		1.00
Satd. Flow (prot)	2008		1631	1733		1583
Flt Permitted	1.00		0.26	1.00		1.00
Satd. Flow (perm)	2008		448	1733		1583
Peak-hour factor, PHF	0.72	0.72	0.85	0.85	0.86	0.86
Adj. Flow (vph)	382	3	366	246	0	749
RTOR Reduction (vph)	0	0	0	0	0	621
Lane Group Flow (vph)	385	0	366	246	0	128
Heavy Vehicles (%)	4%	0%	7%	6%	0%	2%
Turn Type	NA		pm+pt	NA	Prot	Prot
Protected Phases	4		3	8	2	2
Permitted Phases			8			
Actuated Green, G (s)	17.6		36.1	36.1		9.1
Effective Green, g (s)	18.6		36.1	37.1		10.1
Actuated g/C Ratio	0.31		0.61	0.63		0.17
Clearance Time (s)	5.0		4.0	5.0		5.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	630		562	1086		270
v/s Ratio Prot	0.19		c0.16	0.14		c0.08
v/s Ratio Perm			c0.24			
v/c Ratio	0.61		0.65	0.23		0.47
Uniform Delay, d1	17.2		7.5	4.8		22.2
Progression Factor	1.00		1.00	1.00		1.00
Incremental Delay, d2	1.8		2.7	0.1		1.3
Delay (s)	19.0		10.2	4.9		23.5
Level of Service	B		B	A		C
Approach Delay (s)	19.0			8.1	23.5	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	59.2	Sum of lost time (s)	14.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

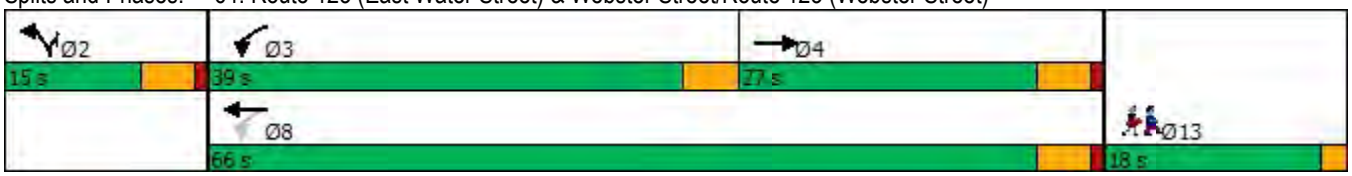


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø13
Lane Configurations							
Traffic Volume (vph)	224	5	576	497	4	463	
Future Volume (vph)	224	5	576	497	4	463	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.997					0.850	
Flt Protected			0.950		0.950		
Satd. Flow (prot)	2084	0	1728	1837	1745	1615	
Flt Permitted			0.368		0.950		
Satd. Flow (perm)	2084	0	669	1837	1745	1615	
Satd. Flow (RTOR)	1					545	
Adj. Flow (vph)	255	6	606	523	5	545	
Lane Group Flow (vph)	261	0	606	523	5	545	
Turn Type	NA		pm+pt	NA	Prot	Prot	
Protected Phases	4		3	8	2	2	13
Permitted Phases			8				
Detector Phase	4		3	8	2	2	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0		10.0	10.0	10.0	10.0	18.0
Total Split (s)	27.0		39.0	66.0	15.0	15.0	18.0
Total Split (%)	27.3%		39.4%	66.7%	15.2%	15.2%	18%
Maximum Green (s)	22.0		35.0	61.0	10.0	10.0	16.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0		0.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0		0.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	None	None	None	None
Walk Time (s)							6.0
Flash Dont Walk (s)							10.0
Pedestrian Calls (#/hr)							0
v/c Ratio	0.48		0.75	0.42	0.02	0.75	
Control Delay	21.6		11.9	5.0	24.2	10.8	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	21.6		11.9	5.0	24.2	10.8	
Queue Length 50th (ft)	62		64	50	1	0	
Queue Length 95th (ft)	159		176	104	10	63	
Internal Link Dist (ft)	862			387	1760		
Turn Bay Length (ft)			210			110	
Base Capacity (vph)	933		1231	1776	373	774	
Starvation Cap Reductn	0		2	201	0	0	
Spillback Cap Reductn	0		0	0	0	0	
Storage Cap Reductn	0		0	0	0	0	
Reduced v/c Ratio	0.28		0.49	0.33	0.01	0.70	

Intersection Summary
Cycle Length: 99

Actuated Cycle Length: 54
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 64: Route 123 (East Water Street) & Webster Street/Route 123 (Webster Street)





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	224	5	576	497	4	463
Future Volume (vph)	224	5	576	497	4	463
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	15	16	11	11	11	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	2084		1728	1837	1745	1615
Flt Permitted	1.00		0.37	1.00	0.95	1.00
Satd. Flow (perm)	2084		670	1837	1745	1615
Peak-hour factor, PHF	0.88	0.88	0.95	0.95	0.85	0.85
Adj. Flow (vph)	255	6	606	523	5	545
RTOR Reduction (vph)	1	0	0	0	0	451
Lane Group Flow (vph)	260	0	606	523	5	94
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Turn Type	NA		pm+pt	NA	Prot	Prot
Protected Phases	4		3	8	2	2
Permitted Phases			8			
Actuated Green, G (s)	13.3		35.3	35.3	8.2	8.2
Effective Green, g (s)	14.3		35.3	36.3	9.2	9.2
Actuated g/C Ratio	0.27		0.66	0.68	0.17	0.17
Clearance Time (s)	5.0		4.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	557		798	1246	300	277
v/s Ratio Prot	0.12		c0.26	0.28	0.00	c0.06
v/s Ratio Perm			c0.25			
v/c Ratio	0.47		0.76	0.42	0.02	0.34
Uniform Delay, d1	16.4		5.7	3.9	18.4	19.5
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6		4.2	0.2	0.0	0.7
Delay (s)	17.0		9.9	4.1	18.4	20.2
Level of Service	B		A	A	B	C
Approach Delay (s)	17.0			7.2	20.2	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	53.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

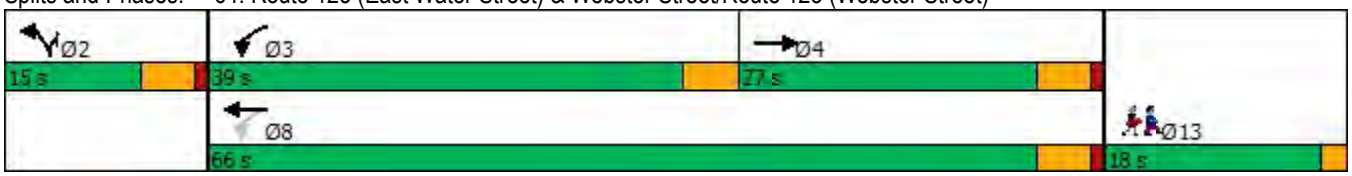


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø13
Lane Configurations							
Traffic Volume (vph)	227	10	373	259	3	427	
Future Volume (vph)	227	10	373	259	3	427	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.994					0.850	
Flt Protected			0.950		0.950		
Satd. Flow (prot)	2077	0	1745	1837	1745	1599	
Flt Permitted			0.335		0.950		
Satd. Flow (perm)	2077	0	615	1837	1745	1599	
Satd. Flow (RTOR)	2					514	
Adj. Flow (vph)	284	13	414	288	4	514	
Lane Group Flow (vph)	297	0	414	288	4	514	
Turn Type	NA		pm+pt	NA	Prot	Prot	
Protected Phases	4		3	8	2	2	13
Permitted Phases			8				
Detector Phase	4		3	8	2	2	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0		10.0	10.0	10.0	10.0	18.0
Total Split (s)	27.0		39.0	66.0	15.0	15.0	18.0
Total Split (%)	27.3%		39.4%	66.7%	15.2%	15.2%	18%
Maximum Green (s)	22.0		35.0	61.0	10.0	10.0	16.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	1.0		0.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	-1.0		0.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	None	None	None	None
Walk Time (s)							6.0
Flash Dont Walk (s)							10.0
Pedestrian Calls (#/hr)							5
v/c Ratio	0.51		0.63	0.26	0.01	0.72	
Control Delay	22.1		10.8	6.2	26.3	10.4	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	22.1		10.8	6.2	26.3	10.4	
Queue Length 50th (ft)	57		37	23	1	0	
Queue Length 95th (ft)	198		179	117	11	59	
Internal Link Dist (ft)	862			387	1760		
Turn Bay Length (ft)			210			110	
Base Capacity (vph)	1008		1313	1721	404	765	
Starvation Cap Reductn	0		3	0	0	0	
Spillback Cap Reductn	0		0	0	0	0	
Storage Cap Reductn	0		0	0	0	0	
Reduced v/c Ratio	0.29		0.32	0.17	0.01	0.67	

Intersection Summary
Cycle Length: 99

Actuated Cycle Length: 52.6
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 64: Route 123 (East Water Street) & Webster Street/Route 123 (Webster Street)



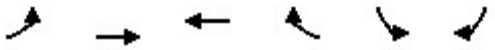


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	227	10	373	259	3	427
Future Volume (vph)	227	10	373	259	3	427
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	15	16	11	11	11	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	2078		1745	1837	1745	1599
Flt Permitted	1.00		0.34	1.00	0.95	1.00
Satd. Flow (perm)	2078		616	1837	1745	1599
Peak-hour factor, PHF	0.80	0.80	0.90	0.90	0.83	0.83
Adj. Flow (vph)	284	12	414	288	4	514
RTOR Reduction (vph)	1	0	0	0	0	423
Lane Group Flow (vph)	296	0	414	288	4	91
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%
Turn Type	NA		pm+pt	NA	Prot	Prot
Protected Phases	4		3	8	2	2
Permitted Phases			8			
Actuated Green, G (s)	14.0		31.0	31.0	8.4	8.4
Effective Green, g (s)	15.0		31.0	32.0	9.4	9.4
Actuated g/C Ratio	0.28		0.58	0.60	0.18	0.18
Clearance Time (s)	5.0		4.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	584		633	1102	307	282
v/s Ratio Prot	0.14		c0.16	0.16	0.00	c0.06
v/s Ratio Perm			c0.22			
v/c Ratio	0.51		0.65	0.26	0.01	0.32
Uniform Delay, d1	16.0		7.0	5.0	18.1	19.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7		2.4	0.1	0.0	0.7
Delay (s)	16.7		9.4	5.2	18.1	19.8
Level of Service	B		A	A	B	B
Approach Delay (s)	16.7			7.7	19.8	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	53.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Hingham Street at Webster Street (Route 123)

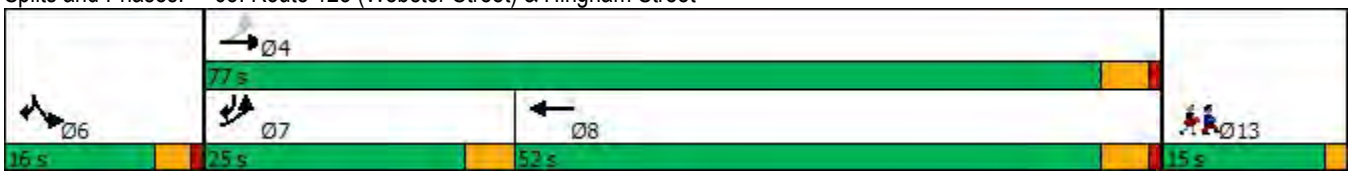


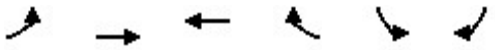
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø13
Lane Configurations							
Traffic Volume (vph)	447	459	306	309	54	216	
Future Volume (vph)	447	459	306	309	54	216	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.932			0.850	
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1694	1801	1873	0	1829	1531	
Flt Permitted	0.125				0.950		
Satd. Flow (perm)	223	1801	1873	0	1829	1531	
Satd. Flow (RTOR)			61			237	
Adj. Flow (vph)	526	540	315	319	59	237	
Lane Group Flow (vph)	526	540	634	0	59	237	
Turn Type	pm+pt	NA	NA		Prot	pt+ov	
Protected Phases	7	4	8		6	6 7	13
Permitted Phases	4						
Detector Phase	7	4	8		6	6 7	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0		5.0		5.0
Minimum Split (s)	10.0	22.5	22.5		10.0		15.0
Total Split (s)	25.0	77.0	52.0		16.0		15.0
Total Split (%)	23.1%	71.3%	48.1%		14.8%		14%
Maximum Green (s)	21.0	72.0	47.0		12.0		13.0
Yellow Time (s)	4.0	4.0	4.0		3.0		2.0
All-Red Time (s)	0.0	1.0	1.0		1.0		0.0
Lost Time Adjust (s)	0.0	-1.0	-1.0		-1.0		
Total Lost Time (s)	4.0	4.0	4.0		3.0		
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0
Recall Mode	None	None	None		None		None
Walk Time (s)							6.0
Flash Dont Walk (s)							7.0
Pedestrian Calls (#/hr)							0
v/c Ratio	0.85	0.39	0.79		0.25	0.28	
Control Delay	32.5	3.6	24.0		33.6	3.3	
Queue Delay	0.0	0.2	0.0		0.0	0.0	
Total Delay	32.5	3.8	24.0		33.6	3.3	
Queue Length 50th (ft)	152	53	207		23	0	
Queue Length 95th (ft)	#382	97	345		65	42	
Internal Link Dist (ft)		387	633		887		
Turn Bay Length (ft)	135				215		
Base Capacity (vph)	618	1724	1318		343	837	
Starvation Cap Reductn	0	440	0		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.85	0.42	0.48		0.17	0.28	

Intersection Summary
Cycle Length: 108

Actuated Cycle Length: 70.7
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 65: Route 123 (Webster Street) & Hingham Street

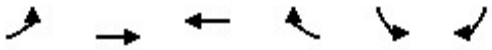




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	447	459	306	309	54	216
Future Volume (vph)	447	459	306	309	54	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	15	16	13	13
Total Lost time (s)	4.0	4.0	4.0		3.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.93		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1694	1801	1873		1829	1531
Flt Permitted	0.13	1.00	1.00		0.95	1.00
Satd. Flow (perm)	223	1801	1873		1829	1531
Peak-hour factor, PHF	0.85	0.85	0.97	0.97	0.91	0.91
Adj. Flow (vph)	526	540	315	319	59	237
RTOR Reduction (vph)	0	0	36	0	0	124
Lane Group Flow (vph)	526	540	598	0	59	113
Heavy Vehicles (%)	3%	2%	6%	2%	2%	9%
Turn Type	pm+pt	NA	NA		Prot	pt+ov
Protected Phases	7	4	8		6	6 7
Permitted Phases	4					
Actuated Green, G (s)	53.5	53.5	28.0		8.0	33.5
Effective Green, g (s)	53.5	54.5	29.0		9.0	33.5
Actuated g/C Ratio	0.76	0.77	0.41		0.13	0.48
Clearance Time (s)	4.0	5.0	5.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	617	1392	770		233	727
v/s Ratio Prot	c0.26	0.30	0.32		c0.03	0.07
v/s Ratio Perm	c0.39					
v/c Ratio	0.85	0.39	0.78		0.25	0.15
Uniform Delay, d1	16.9	2.6	17.9		27.7	10.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	11.0	0.2	4.9		0.6	0.1
Delay (s)	27.9	2.8	22.9		28.3	10.6
Level of Service	C	A	C		C	B
Approach Delay (s)		15.1	22.9		14.1	
Approach LOS		B	C		B	

Intersection Summary			
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

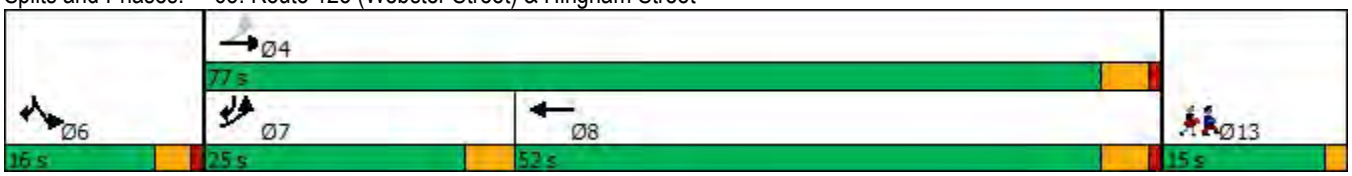


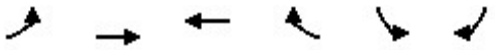
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø13
Lane Configurations							
Traffic Volume (vph)	310	369	537	47	95	525	
Future Volume (vph)	310	369	537	47	95	525	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.989			0.850	
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1745	1837	2045	0	1847	1669	
Flt Permitted	0.134				0.950		
Satd. Flow (perm)	246	1837	2045	0	1847	1669	
Satd. Flow (RTOR)			5			395	
Adj. Flow (vph)	341	405	571	50	106	583	
Lane Group Flow (vph)	341	405	621	0	106	583	
Turn Type	pm+pt	NA	NA		Prot	pt+ov	
Protected Phases	7	4	8		6	6 7	13
Permitted Phases	4						
Detector Phase	7	4	8		6	6 7	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0		5.0		5.0
Minimum Split (s)	10.0	22.5	22.5		10.0		15.0
Total Split (s)	25.0	77.0	52.0		16.0		15.0
Total Split (%)	23.1%	71.3%	48.1%		14.8%		14%
Maximum Green (s)	21.0	72.0	47.0		12.0		13.0
Yellow Time (s)	4.0	4.0	4.0		3.0		2.0
All-Red Time (s)	0.0	1.0	1.0		1.0		0.0
Lost Time Adjust (s)	0.0	-1.0	-1.0		-1.0		
Total Lost Time (s)	4.0	4.0	4.0		3.0		
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0
Recall Mode	None	None	None		None		None
Walk Time (s)							6.0
Flash Dont Walk (s)							7.0
Pedestrian Calls (#/hr)							0
v/c Ratio	0.59	0.30	0.77		0.35	0.58	
Control Delay	15.1	3.9	25.3		32.3	7.3	
Queue Delay	0.0	0.1	0.0		0.0	0.0	
Total Delay	15.1	4.0	25.3		32.3	7.3	
Queue Length 50th (ft)	66	51	239		41	42	
Queue Length 95th (ft)	166	78	353		99	163	
Internal Link Dist (ft)		387	633		887		
Turn Bay Length (ft)	135				215		
Base Capacity (vph)	666	1761	1491		372	1076	
Starvation Cap Reductn	0	470	0		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.51	0.31	0.42		0.28	0.54	

Intersection Summary
Cycle Length: 108

Actuated Cycle Length: 67.9
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 65: Route 123 (Webster Street) & Hingham Street

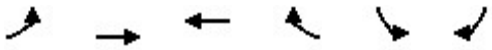




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	310	369	537	47	95	525
Future Volume (vph)	310	369	537	47	95	525
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	15	16	13	13
Total Lost time (s)	4.0	4.0	4.0		3.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1745	1837	2045		1847	1669
Flt Permitted	0.13	1.00	1.00		0.95	1.00
Satd. Flow (perm)	247	1837	2045		1847	1669
Peak-hour factor, PHF	0.91	0.91	0.94	0.94	0.90	0.90
Adj. Flow (vph)	341	405	571	50	106	583
RTOR Reduction (vph)	0	0	3	0	0	204
Lane Group Flow (vph)	341	405	618	0	106	379
Heavy Vehicles (%)	0%	0%	1%	2%	1%	0%
Turn Type	pm+pt	NA	NA		Prot	pt+ov
Protected Phases	7	4	8		6	6 7
Permitted Phases	4					
Actuated Green, G (s)	48.1	48.1	25.8		10.3	32.6
Effective Green, g (s)	48.1	49.1	26.8		11.3	32.6
Actuated g/C Ratio	0.71	0.73	0.40		0.17	0.48
Clearance Time (s)	4.0	5.0	5.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	582	1338	813		309	807
v/s Ratio Prot	c0.16	0.22	c0.30		0.06	c0.23
v/s Ratio Perm	0.26					
v/c Ratio	0.59	0.30	0.76		0.34	0.47
Uniform Delay, d1	11.7	3.2	17.5		24.8	11.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.5	0.1	4.2		0.7	0.4
Delay (s)	13.2	3.3	21.7		25.4	12.1
Level of Service	B	A	C		C	B
Approach Delay (s)		7.9	21.7		14.1	
Approach LOS		A	C		B	

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	14.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

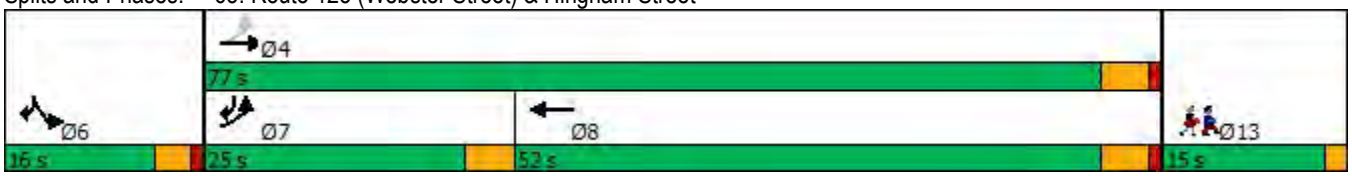


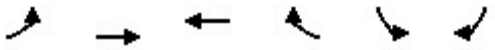
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø13
Lane Configurations							
Traffic Volume (vph)	336	323	349	48	54	281	
Future Volume (vph)	336	323	349	48	54	281	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.984			0.850	
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1728	1837	2057	0	1829	1669	
Flt Permitted	0.216				0.950		
Satd. Flow (perm)	393	1837	2057	0	1829	1669	
Satd. Flow (RTOR)			8			327	
Adj. Flow (vph)	386	371	384	53	63	327	
Lane Group Flow (vph)	386	371	437	0	63	327	
Turn Type	pm+pt	NA	NA		Prot	pt+ov	
Protected Phases	7	4	8		6	6 7	13
Permitted Phases	4						
Detector Phase	7	4	8		6	6 7	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0		5.0		5.0
Minimum Split (s)	10.0	22.5	22.5		10.0		15.0
Total Split (s)	25.0	77.0	52.0		16.0		15.0
Total Split (%)	23.1%	71.3%	48.1%		14.8%		14%
Maximum Green (s)	21.0	72.0	47.0		12.0		13.0
Yellow Time (s)	4.0	4.0	4.0		3.0		2.0
All-Red Time (s)	0.0	1.0	1.0		1.0		0.0
Lost Time Adjust (s)	0.0	-1.0	-1.0		-1.0		
Total Lost Time (s)	4.0	4.0	4.0		3.0		
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0
Recall Mode	None	None	None		None		None
Walk Time (s)							6.0
Flash Dont Walk (s)							7.0
Pedestrian Calls (#/hr)							0
v/c Ratio	0.55	0.28	0.66		0.22	0.31	
Control Delay	8.4	3.4	22.0		25.6	2.2	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	8.4	3.5	22.0		25.6	2.2	
Queue Length 50th (ft)	33	30	126		19	0	
Queue Length 95th (ft)	112	62	224		53	30	
Internal Link Dist (ft)		387	633		887		
Turn Bay Length (ft)	135				215		
Base Capacity (vph)	807	1837	1775		447	1131	
Starvation Cap Reductn	0	338	0		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.48	0.25	0.25		0.14	0.29	

Intersection Summary
Cycle Length: 108

Actuated Cycle Length: 55.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 65: Route 123 (Webster Street) & Hingham Street



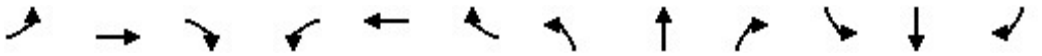


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	336	323	349	48	54	281
Future Volume (vph)	336	323	349	48	54	281
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	15	16	13	13
Total Lost time (s)	4.0	4.0	4.0		3.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1728	1837	2056		1829	1669
Flt Permitted	0.22	1.00	1.00		0.95	1.00
Satd. Flow (perm)	392	1837	2056		1829	1669
Peak-hour factor, PHF	0.87	0.87	0.91	0.91	0.86	0.86
Adj. Flow (vph)	386	371	384	53	63	327
RTOR Reduction (vph)	0	0	5	0	0	153
Lane Group Flow (vph)	386	371	432	0	63	174
Heavy Vehicles (%)	1%	0%	0%	0%	2%	0%
Turn Type	pm+pt	NA	NA		Prot	pt+ov
Protected Phases	7	4	8		6	6 7
Permitted Phases	4					
Actuated Green, G (s)	38.3	38.3	16.7		7.6	29.2
Effective Green, g (s)	38.3	39.3	17.7		8.6	29.2
Actuated g/C Ratio	0.70	0.72	0.32		0.16	0.53
Clearance Time (s)	4.0	5.0	5.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	701	1315	662		286	887
v/s Ratio Prot	c0.18	0.20	c0.21		c0.03	0.10
v/s Ratio Perm	0.21					
v/c Ratio	0.55	0.28	0.65		0.22	0.20
Uniform Delay, d1	5.5	2.8	16.0		20.2	6.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.9	0.1	2.3		0.4	0.1
Delay (s)	6.4	2.9	18.3		20.6	6.8
Level of Service	A	A	B		C	A
Approach Delay (s)		4.7	18.3		9.1	
Approach LOS		A	B		A	

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	54.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Union Street at East Water Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	285	0	38	158	31	9	304	49	20	221	72
Future Volume (vph)	100	285	0	38	158	31	9	304	49	20	221	72
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.982				0.850			0.850
Flt Protected		0.987			0.992			0.999			0.996	
Satd. Flow (prot)	0	2104	0	0	1819	0	0	2110	1830	0	1818	1561
Flt Permitted		0.860			0.893			0.987			0.953	
Satd. Flow (perm)	0	1834	0	0	1638	0	0	2085	1830	0	1740	1561
Satd. Flow (RTOR)					9				67			95
Adj. Flow (vph)	108	306	0	44	184	36	9	313	51	26	291	95
Lane Group Flow (vph)	0	414	0	0	264	0	0	322	51	0	317	95
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	25.0	25.0		25.0	25.0		38.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	30.9%	30.9%		30.9%	30.9%		46.9%	46.9%	46.9%	46.9%	46.9%	46.9%
Maximum Green (s)	19.0	19.0		19.0	19.0		32.0	32.0	32.0	32.0	32.0	32.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-2.0			-2.0			-2.0	0.0		-2.0	0.0
Total Lost Time (s)		4.0			4.0			4.0	6.0		4.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.52			0.37			0.44	0.08		0.52	0.17
Control Delay		18.0			15.1			15.3	3.7		17.2	4.7
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		18.0			15.1			15.3	3.7		17.2	4.7
Queue Length 50th (ft)		63			36			61	0		62	0
Queue Length 95th (ft)		#322			165			174	16		146	19
Internal Link Dist (ft)		778			2628			1770			2303	
Turn Bay Length (ft)									150			90
Base Capacity (vph)		802			721			1476	1242		1232	1072
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		0.52			0.37			0.22	0.04		0.26	0.09

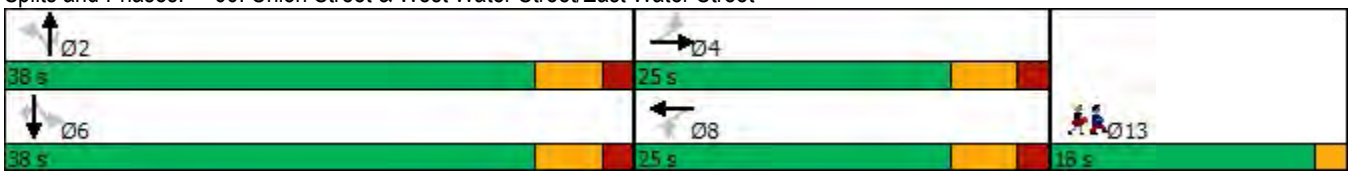
Intersection Summary
Cycle Length: 81

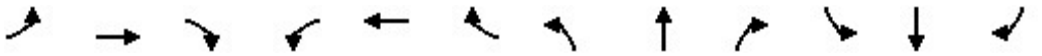
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	22%
Maximum Green (s)	16.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	10.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	22
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 50.6
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 66: Union Street & West Water Street/East Water Street

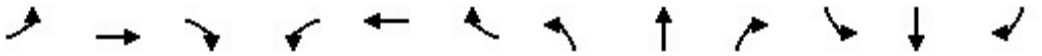




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	285	0	38	158	31	9	304	49	20	221	72
Future Volume (vph)	100	285	0	38	158	31	9	304	49	20	221	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	13	13	13	13	16	16	12	12	11
Total Lost time (s)		4.0			4.0			4.0	6.0		4.0	6.0
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frt		1.00			0.98			1.00	0.85		1.00	0.85
Flt Protected		0.99			0.99			1.00	1.00		1.00	1.00
Satd. Flow (prot)		2105			1818			2109	1830		1818	1561
Flt Permitted		0.86			0.89			0.99	1.00		0.95	1.00
Satd. Flow (perm)		1833			1636			2084	1830		1739	1561
Peak-hour factor, PHF	0.93	0.93	0.93	0.86	0.86	0.86	0.97	0.97	0.97	0.76	0.76	0.76
Adj. Flow (vph)	108	306	0	44	184	36	9	313	51	26	291	95
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	36	0	0	67
Lane Group Flow (vph)	0	414	0	0	259	0	0	322	15	0	317	28
Heavy Vehicles (%)	1%	1%	0%	0%	6%	7%	0%	2%	0%	5%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		20.0			20.0			15.5	15.5		15.5	15.5
Effective Green, g (s)		22.0			22.0			17.5	15.5		17.5	15.5
Actuated g/C Ratio		0.43			0.43			0.34	0.30		0.34	0.30
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		780			696			705	548		588	467
v/s Ratio Prot												
v/s Ratio Perm		c0.23			0.16			0.15	0.01		c0.18	0.02
v/c Ratio		0.53			0.37			0.46	0.03		0.54	0.06
Uniform Delay, d1		11.0			10.1			13.4	12.8		13.8	12.9
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.7			0.3			0.5	0.0		1.0	0.1
Delay (s)		11.7			10.5			13.9	12.8		14.8	13.0
Level of Service		B			B			B	B		B	B
Approach Delay (s)		11.7			10.5			13.7			14.4	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	51.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	211	0	91	406	29	23	233	65	18	367	160
Future Volume (vph)	80	211	0	91	406	29	23	233	65	18	367	160
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.993				0.850			0.850
Flt Protected		0.986			0.991			0.995			0.998	
Satd. Flow (prot)	0	2117	0	0	1917	0	0	2123	1830	0	1878	1561
Flt Permitted		0.722			0.882			0.934			0.976	
Satd. Flow (perm)	0	1550	0	0	1706	0	0	1993	1830	0	1837	1561
Satd. Flow (RTOR)					4				78			140
Adj. Flow (vph)	94	248	0	97	432	31	28	281	78	21	437	190
Lane Group Flow (vph)	0	342	0	0	560	0	0	309	78	0	458	190
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	25.0	25.0		25.0	25.0		38.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	30.9%	30.9%		30.9%	30.9%		46.9%	46.9%	46.9%	46.9%	46.9%	46.9%
Maximum Green (s)	19.0	19.0		19.0	19.0		32.0	32.0	32.0	32.0	32.0	32.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-2.0			-2.0			-2.0	0.0		-2.0	0.0
Total Lost Time (s)		4.0			4.0			4.0	6.0		4.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.54			0.80			0.39	0.11		0.63	0.30
Control Delay		21.4			29.8			13.9	4.3		18.4	6.1
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		21.4			29.8			13.9	4.3		18.4	6.1
Queue Length 50th (ft)		69			129			59	0		97	9
Queue Length 95th (ft)		#280			#558			150	21		243	48
Internal Link Dist (ft)		778			2628			1770			2303	
Turn Bay Length (ft)									150			90
Base Capacity (vph)		631			697			1314	1165		1211	1021
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		0.54			0.80			0.24	0.07		0.38	0.19

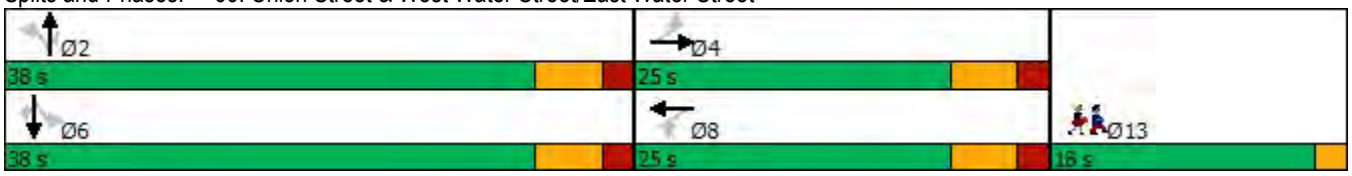
Intersection Summary
Cycle Length: 81

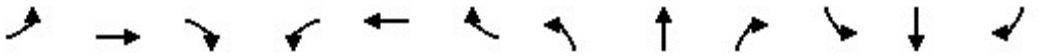
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	22%
Maximum Green (s)	16.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	10.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	10
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 54.2
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 66: Union Street & West Water Street/East Water Street

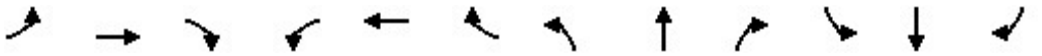




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	211	0	91	406	29	23	233	65	18	367	160
Future Volume (vph)	80	211	0	91	406	29	23	233	65	18	367	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	13	13	13	13	16	16	12	12	11
Total Lost time (s)		4.0			4.0			4.0	6.0		4.0	6.0
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frt		1.00			0.99			1.00	0.85		1.00	0.85
Flt Protected		0.99			0.99			1.00	1.00		1.00	1.00
Satd. Flow (prot)		2118			1917			2124	1830		1878	1561
Flt Permitted		0.72			0.88			0.93	1.00		0.98	1.00
Satd. Flow (perm)		1550			1706			1993	1830		1838	1561
Peak-hour factor, PHF	0.85	0.85	0.85	0.94	0.94	0.94	0.83	0.83	0.83	0.84	0.84	0.84
Adj. Flow (vph)	94	248	0	97	432	31	28	281	78	21	437	190
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	51	0	0	91
Lane Group Flow (vph)	0	342	0	0	558	0	0	309	27	0	458	99
Heavy Vehicles (%)	1%	0%	0%	0%	1%	0%	0%	1%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		20.0			20.0			19.2	19.2		19.2	19.2
Effective Green, g (s)		22.0			22.0			21.2	19.2		21.2	19.2
Actuated g/C Ratio		0.40			0.40			0.38	0.35		0.38	0.35
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		616			678			764	635		704	541
v/s Ratio Prot												
v/s Ratio Perm		0.22			c0.33			0.16	0.01		c0.25	0.06
v/c Ratio		0.56			0.82			0.40	0.04		0.65	0.18
Uniform Delay, d1		12.9			14.9			12.4	12.0		14.0	12.6
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		1.1			8.0			0.4	0.0		2.2	0.2
Delay (s)		14.0			22.9			12.8	12.0		16.2	12.7
Level of Service		B			C			B	B		B	B
Approach Delay (s)		14.0			22.9			12.6			15.2	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	55.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	205	0	60	239	30	14	249	53	20	284	135
Future Volume (vph)	66	205	0	60	239	30	14	249	53	20	284	135
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.988				0.850			0.850
Flt Protected		0.988			0.991			0.997			0.997	
Satd. Flow (prot)	0	2101	0	0	1922	0	0	2147	1830	0	1871	1531
Flt Permitted		0.850			0.900			0.969			0.965	
Satd. Flow (perm)	0	1808	0	0	1746	0	0	2087	1830	0	1811	1531
Satd. Flow (RTOR)					6				67			150
Adj. Flow (vph)	78	241	0	63	252	32	16	277	59	26	364	173
Lane Group Flow (vph)	0	319	0	0	347	0	0	293	59	0	390	173
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	25.0	25.0		25.0	25.0		38.0	38.0	38.0	38.0	38.0	38.0
Total Split (%)	30.9%	30.9%		30.9%	30.9%		46.9%	46.9%	46.9%	46.9%	46.9%	46.9%
Maximum Green (s)	19.0	19.0		19.0	19.0		32.0	32.0	32.0	32.0	32.0	32.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-2.0			-2.0			-2.0	0.0		-2.0	0.0
Total Lost Time (s)		4.0			4.0			4.0	6.0		4.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.46			0.52			0.36	0.09		0.55	0.27
Control Delay		17.6			18.9			13.1	4.1		16.0	5.2
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		17.6			18.9			13.1	4.1		16.0	5.2
Queue Length 50th (ft)		53			58			50	0		73	4
Queue Length 95th (ft)		215			#282			156	20		183	31
Internal Link Dist (ft)		778			2628			1770			2303	
Turn Bay Length (ft)									150			90
Base Capacity (vph)		848			822			1564	1327		1357	1137
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		0.38			0.42			0.19	0.04		0.29	0.15

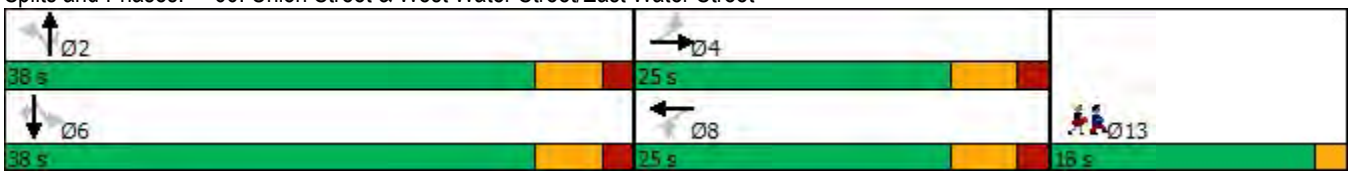
Intersection Summary
Cycle Length: 81

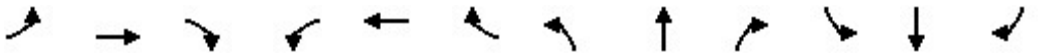
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	22%
Maximum Green (s)	16.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	10.0
Flash Dont Walk (s)	6.0
Pedestrian Calls (#/hr)	7
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 49.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 66: Union Street & West Water Street/East Water Street



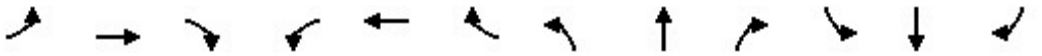


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	205	0	60	239	30	14	249	53	20	284	135
Future Volume (vph)	66	205	0	60	239	30	14	249	53	20	284	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	13	13	13	13	16	16	12	12	11
Total Lost time (s)		4.0			4.0			4.0	6.0		4.0	6.0
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	1.00
Frt		1.00			0.99			1.00	0.85		1.00	0.85
Flt Protected		0.99			0.99			1.00	1.00		1.00	1.00
Satd. Flow (prot)		2101			1921			2147	1830		1870	1531
Flt Permitted		0.85			0.90			0.97	1.00		0.97	1.00
Satd. Flow (perm)		1808			1745			2086	1830		1811	1531
Peak-hour factor, PHF	0.85	0.85	0.85	0.95	0.95	0.95	0.90	0.90	0.90	0.78	0.78	0.78
Adj. Flow (vph)	78	241	0	63	252	32	16	277	59	26	364	173
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	39	0	0	98
Lane Group Flow (vph)	0	319	0	0	343	0	0	293	20	0	390	75
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	0%	0%	0%	5%	1%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		16.6			16.6			17.1	17.1		17.1	17.1
Effective Green, g (s)		18.6			18.6			19.1	17.1		19.1	17.1
Actuated g/C Ratio		0.37			0.37			0.38	0.34		0.38	0.34
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	6.0
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		676			653			801	629		695	526
v/s Ratio Prot												
v/s Ratio Perm		0.18			c0.20			0.14	0.01		c0.22	0.05
v/c Ratio		0.47			0.53			0.37	0.03		0.56	0.14
Uniform Delay, d1		11.8			12.1			11.0	10.8		12.0	11.2
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.5			0.8			0.3	0.0		1.0	0.1
Delay (s)		12.3			12.9			11.2	10.8		13.1	11.4
Level of Service		B			B			B	B		B	B
Approach Delay (s)		12.3			12.9			11.2			12.5	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	49.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Union Street at Market Street (Route 123/Route 139)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	383	53	34	334	77	36	52	47	83	47	132
Future Volume (vph)	183	383	53	34	334	77	36	52	47	83	47	132
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982			0.972			0.953				0.850
Flt Protected	0.950			0.950				0.987			0.969	
Satd. Flow (prot)	1728	1742	0	1685	1779	0	0	1993	0	0	1745	1553
Flt Permitted	0.232			0.494				0.882			0.712	
Satd. Flow (perm)	422	1742	0	876	1779	0	0	1781	0	0	1282	1553
Satd. Flow (RTOR)		9			13			27				171
Adj. Flow (vph)	197	412	57	40	388	90	44	63	57	108	61	171
Lane Group Flow (vph)	197	469	0	40	478	0	0	164	0	0	169	171
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	1.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	5.0	22.5		22.5	22.5		22.5	22.5		22.5	22.5	22.5
Total Split (s)	9.0	43.0		34.0	34.0		25.0	25.0		25.0	25.0	25.0
Total Split (%)	9.8%	46.7%		37.0%	37.0%		27.2%	27.2%		27.2%	27.2%	27.2%
Maximum Green (s)	5.0	38.0		29.0	29.0		20.0	20.0		20.0	20.0	20.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	-1.0		-1.0	-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.56	0.49		0.12	0.70			0.34			0.51	0.33
Control Delay	20.1	13.2		16.7	24.2			20.5			28.7	6.6
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	20.1	13.2		16.7	24.2			20.5			28.7	6.6
Queue Length 50th (ft)	27	75		8	115			35			46	0
Queue Length 95th (ft)	#161	311		39	#375			112			129	31
Internal Link Dist (ft)		922			945			742			1770	
Turn Bay Length (ft)	175			145								70
Base Capacity (vph)	349	1244		480	981			700			492	701
Starvation Cap Reductn	0	0		0	0			0			0	0
Spillback Cap Reductn	0	0		0	0			0			0	0
Storage Cap Reductn	0	0		0	0			0			0	0
Reduced v/c Ratio	0.56	0.38		0.08	0.49			0.23			0.34	0.24

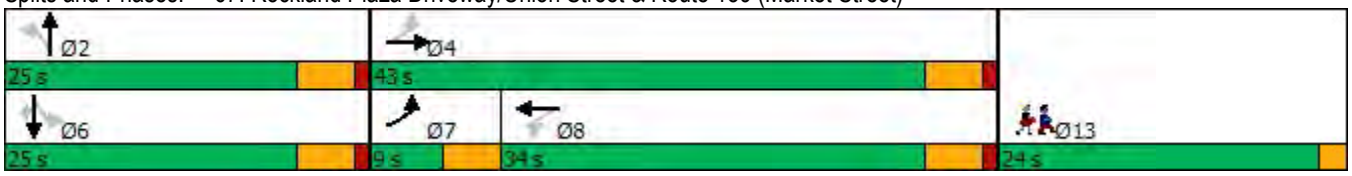
Intersection Summary
Cycle Length: 92

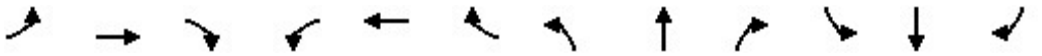
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	26%
Maximum Green (s)	22.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	4
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 59.2
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 67: Rockland Plaza Driveway/Union Street & Route 139 (Market Street)

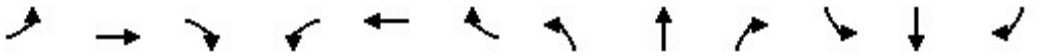




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	383	53	34	334	77	36	52	47	83	47	132
Future Volume (vph)	183	383	53	34	334	77	36	52	47	83	47	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	10	12	12	16	16	16	11	11	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.97			0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	1.00
Satd. Flow (prot)	1728	1742		1685	1779			1993			1745	1553
Flt Permitted	0.23	1.00		0.49	1.00			0.88			0.71	1.00
Satd. Flow (perm)	422	1742		876	1779			1781			1282	1553
Peak-hour factor, PHF	0.93	0.93	0.93	0.86	0.86	0.86	0.82	0.82	0.82	0.77	0.77	0.77
Adj. Flow (vph)	197	412	57	40	388	90	44	63	57	108	61	171
RTOR Reduction (vph)	0	4	0	0	8	0	0	20	0	0	0	128
Lane Group Flow (vph)	197	465	0	40	470	0	0	144	0	0	169	43
Heavy Vehicles (%)	1%	4%	0%	0%	4%	3%	6%	0%	0%	2%	2%	4%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	31.1	31.1		21.7	21.7			14.2			14.2	14.2
Effective Green, g (s)	31.1	32.1		22.7	22.7			15.2			15.2	15.2
Actuated g/C Ratio	0.52	0.53		0.38	0.38			0.25			0.25	0.25
Clearance Time (s)	4.0	5.0		5.0	5.0			5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	335	930		330	671			450			324	392
v/s Ratio Prot	0.05	c0.27			c0.26							
v/s Ratio Perm	0.25			0.05				0.08			c0.13	0.03
v/c Ratio	0.59	0.50		0.12	0.70			0.32			0.52	0.11
Uniform Delay, d1	9.9	8.9		12.2	15.8			18.2			19.3	17.3
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	2.6	0.4		0.2	3.3			0.4			1.5	0.1
Delay (s)	12.5	9.3		12.4	19.1			18.7			20.8	17.4
Level of Service	B	A		B	B			B			C	B
Approach Delay (s)		10.3			18.6			18.7			19.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	60.1	Sum of lost time (s)	14.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	455	44	37	517	71	41	32	39	112	51	284
Future Volume (vph)	190	455	44	37	517	71	41	32	39	112	51	284
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.982			0.953				0.850
Flt Protected	0.950			0.950				0.982			0.967	
Satd. Flow (prot)	1711	1796	0	1685	1847	0	0	2015	0	0	1764	1599
Flt Permitted	0.178			0.467				0.829			0.674	
Satd. Flow (perm)	321	1796	0	828	1847	0	0	1701	0	0	1229	1599
Satd. Flow (RTOR)		7			8			27				302
Adj. Flow (vph)	202	484	47	39	544	75	60	47	57	119	54	302
Lane Group Flow (vph)	202	531	0	39	619	0	0	164	0	0	173	302
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	1.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	5.0	22.5		22.5	22.5		22.5	22.5		22.5	22.5	22.5
Total Split (s)	9.0	43.0		34.0	34.0		25.0	25.0		25.0	25.0	25.0
Total Split (%)	9.8%	46.7%		37.0%	37.0%		27.2%	27.2%		27.2%	27.2%	27.2%
Maximum Green (s)	5.0	38.0		29.0	29.0		20.0	20.0		20.0	20.0	20.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	-1.0		-1.0	-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.68	0.50		0.10	0.73			0.39			0.61	0.50
Control Delay	26.5	13.0		16.2	24.8			22.5			34.6	6.7
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	26.5	13.0		16.2	24.8			22.5			34.6	6.7
Queue Length 50th (ft)	29	95		8	175			42			57	0
Queue Length 95th (ft)	#195	363		41	#594			88			162	65
Internal Link Dist (ft)		922			945			742			1770	
Turn Bay Length (ft)	175			145								70
Base Capacity (vph)	296	1068		378	847			561			392	716
Starvation Cap Reductn	0	0		0	0			0			0	0
Spillback Cap Reductn	0	0		0	0			0			0	0
Storage Cap Reductn	0	0		0	0			0			0	0
Reduced v/c Ratio	0.68	0.50		0.10	0.73			0.29			0.44	0.42

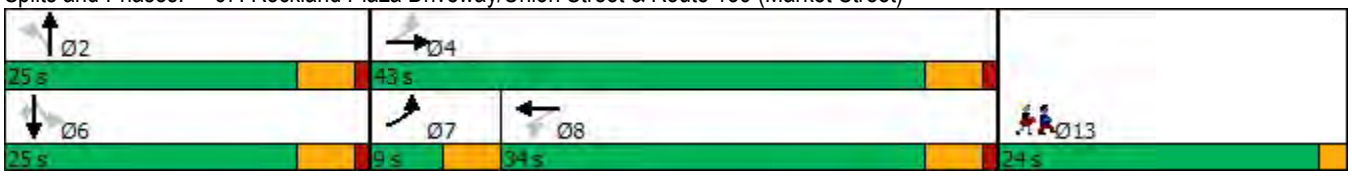
Intersection Summary
Cycle Length: 92

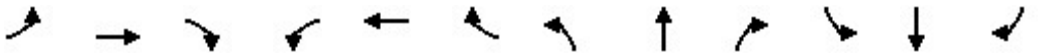
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	26%
Maximum Green (s)	22.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	14
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 67.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 67: Rockland Plaza Driveway/Union Street & Route 139 (Market Street)

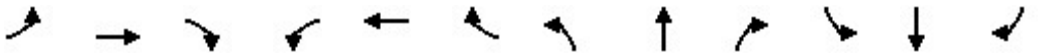




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	455	44	37	517	71	41	32	39	112	51	284
Future Volume (vph)	190	455	44	37	517	71	41	32	39	112	51	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	10	12	12	16	16	16	11	11	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.98			0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	1.00
Satd. Flow (prot)	1711	1796		1685	1847			2015			1763	1599
Flt Permitted	0.18	1.00		0.47	1.00			0.83			0.67	1.00
Satd. Flow (perm)	321	1796		827	1847			1701			1230	1599
Peak-hour factor, PHF	0.94	0.94	0.94	0.95	0.95	0.95	0.68	0.68	0.68	0.94	0.94	0.94
Adj. Flow (vph)	202	484	47	39	544	75	60	47	57	119	54	302
RTOR Reduction (vph)	0	3	0	0	4	0	0	21	0	0	0	233
Lane Group Flow (vph)	202	528	0	39	615	0	0	143	0	0	173	69
Heavy Vehicles (%)	2%	1%	0%	0%	1%	1%	0%	0%	0%	1%	0%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	39.1	39.1		30.0	30.0			14.7			14.7	14.7
Effective Green, g (s)	39.1	40.1		31.0	31.0			15.7			15.7	15.7
Actuated g/C Ratio	0.57	0.58		0.45	0.45			0.23			0.23	0.23
Clearance Time (s)	4.0	5.0		5.0	5.0			5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	284	1043		371	829			387			279	363
v/s Ratio Prot	c0.05	0.29			0.33							
v/s Ratio Perm	c0.35			0.05				0.08			c0.14	0.04
v/c Ratio	0.71	0.51		0.11	0.74			0.37			0.62	0.19
Uniform Delay, d1	11.2	8.6		11.0	15.7			22.5			24.0	21.5
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	8.1	0.4		0.1	3.6			0.6			4.2	0.3
Delay (s)	19.4	9.0		11.1	19.3			23.1			28.2	21.8
Level of Service	B	A		B	B			C			C	C
Approach Delay (s)		11.8			18.8			23.1			24.1	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	450	67	37	453	61	74	50	43	107	61	190
Future Volume (vph)	182	450	67	37	453	61	74	50	43	107	61	190
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981			0.982			0.965				0.850
Flt Protected	0.950			0.950				0.978			0.969	
Satd. Flow (prot)	1745	1786	0	1685	1850	0	0	2022	0	0	1757	1615
Flt Permitted	0.181			0.402				0.703			0.653	
Satd. Flow (perm)	332	1786	0	713	1850	0	0	1453	0	0	1184	1615
Satd. Flow (RTOR)		10			8			18				219
Adj. Flow (vph)	209	517	77	40	487	66	104	70	61	130	74	232
Lane Group Flow (vph)	209	594	0	40	553	0	0	235	0	0	204	232
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	1.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	5.0	22.5		22.5	22.5		22.5	22.5		22.5	22.5	22.5
Total Split (s)	9.0	43.0		34.0	34.0		25.0	25.0		25.0	25.0	25.0
Total Split (%)	9.8%	46.7%		37.0%	37.0%		27.2%	27.2%		27.2%	27.2%	27.2%
Maximum Green (s)	5.0	38.0		29.0	29.0		20.0	20.0		20.0	20.0	20.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	0.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	-1.0		-1.0	-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.72	0.61		0.14	0.74			0.57			0.62	0.38
Control Delay	29.4	16.2		17.8	26.5			27.9			34.2	6.8
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0
Total Delay	29.4	16.2		17.8	26.5			27.9			34.2	6.8
Queue Length 50th (ft)	36	132		9	167			70			68	4
Queue Length 95th (ft)	#188	402		43	#503			145			#187	48
Internal Link Dist (ft)		922			945			742			1770	
Turn Bay Length (ft)	175			145								70
Base Capacity (vph)	292	1103		337	880			493			392	681
Starvation Cap Reductn	0	0		0	0			0			0	0
Spillback Cap Reductn	0	0		0	0			0			0	0
Storage Cap Reductn	0	0		0	0			0			0	0
Reduced v/c Ratio	0.72	0.54		0.12	0.63			0.48			0.52	0.34

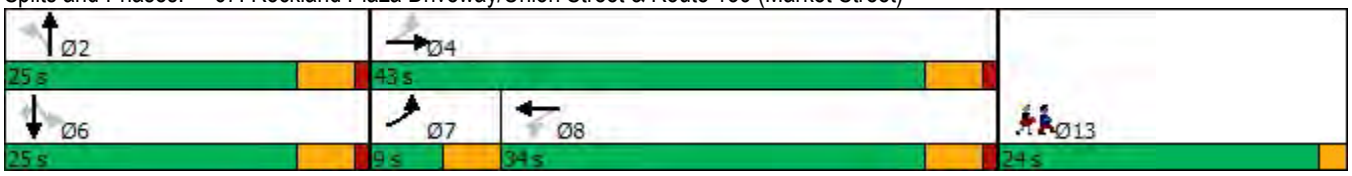
Intersection Summary
Cycle Length: 92

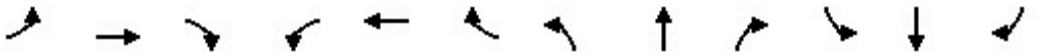
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	26%
Maximum Green (s)	22.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	5
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 66.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 67: Rockland Plaza Driveway/Union Street & Route 139 (Market Street)



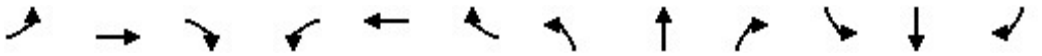


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	450	67	37	453	61	74	50	43	107	61	190
Future Volume (vph)	182	450	67	37	453	61	74	50	43	107	61	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	10	12	12	16	16	16	11	11	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.98		1.00	0.98			0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	1.00
Satd. Flow (prot)	1745	1785		1685	1850			2022			1758	1615
Flt Permitted	0.18	1.00		0.40	1.00			0.70			0.65	1.00
Satd. Flow (perm)	333	1785		713	1850			1453			1184	1615
Peak-hour factor, PHF	0.87	0.87	0.87	0.93	0.93	0.93	0.71	0.71	0.71	0.82	0.82	0.82
Adj. Flow (vph)	209	517	77	40	487	66	104	70	61	130	74	232
RTOR Reduction (vph)	0	5	0	0	5	0	0	13	0	0	0	160
Lane Group Flow (vph)	209	589	0	40	548	0	0	222	0	0	204	72
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	2%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	35.1	35.1		25.9	25.9			17.3			17.3	17.3
Effective Green, g (s)	35.1	36.1		26.9	26.9			18.3			18.3	18.3
Actuated g/C Ratio	0.52	0.53		0.40	0.40			0.27			0.27	0.27
Clearance Time (s)	4.0	5.0		5.0	5.0			5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	281	953		283	736			393			320	437
v/s Ratio Prot	0.06	c0.33			0.30							
v/s Ratio Perm	c0.33			0.06				0.15			c0.17	0.04
v/c Ratio	0.74	0.62		0.14	0.74			0.56			0.64	0.17
Uniform Delay, d1	12.1	11.0		13.0	17.4			21.2			21.7	18.8
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	10.2	1.2		0.2	4.1			1.9			4.1	0.2
Delay (s)	22.3	12.2		13.2	21.5			23.1			25.9	19.0
Level of Service	C	B		B	C			C			C	B
Approach Delay (s)		14.8			21.0			23.1			22.2	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	19.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	67.6	Sum of lost time (s)	14.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Plymouth Street (Route 58) at Central Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	442	74	17	204	34	33	224	36	4	309	36
Future Volume (vph)	32	442	74	17	204	34	33	224	36	4	309	36
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982			0.982			0.984			0.986	
Flt Protected		0.997			0.997			0.994			0.999	
Satd. Flow (prot)	0	1889	0	0	1803	0	0	1744	0	0	1888	0
Flt Permitted		0.967			0.950			0.902			0.995	
Satd. Flow (perm)	0	1832	0	0	1718	0	0	1582	0	0	1881	0
Satd. Flow (RTOR)		7			7			8			7	
Adj. Flow (vph)	36	491	82	22	262	44	39	264	42	5	377	44
Lane Group Flow (vph)	0	609	0	0	328	0	0	345	0	0	426	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	40.0	40.0		40.0	40.0		54.0	54.0		54.0	54.0	
Total Split (%)	35.7%	35.7%		35.7%	35.7%		48.2%	48.2%		48.2%	48.2%	
Maximum Green (s)	34.0	34.0		34.0	34.0		48.0	48.0		48.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0			-2.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.60			0.35			0.66			0.68	
Control Delay		14.2			10.4			24.8			24.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		14.2			10.4			24.8			24.8	
Queue Length 50th (ft)		146			64			113			143	
Queue Length 95th (ft)		312			119			176			199	
Internal Link Dist (ft)		788			850			143			500	
Turn Bay Length (ft)												
Base Capacity (vph)		1008			946			1208			1435	
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		0.60			0.35			0.29			0.30	

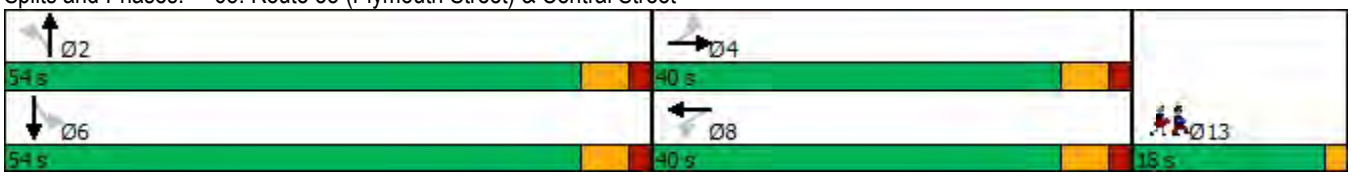
Intersection Summary
Cycle Length: 112

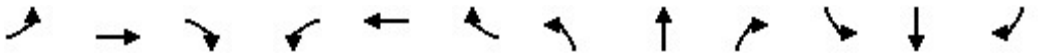
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	16%
Maximum Green (s)	16.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	10.0
Pedestrian Calls (#/hr)	0
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 65.9
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 68: Route 58 (Plymouth Street) & Central Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	32	442	74	17	204	34	33	224	36	4	309	36
Future Volume (vph)	32	442	74	17	204	34	33	224	36	4	309	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	12	12	12	11	11	11	13	13	13
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0.98			0.98			0.99	
Flt Protected		1.00			1.00			0.99			1.00	
Satd. Flow (prot)		1889			1802			1744			1889	
Flt Permitted		0.97			0.95			0.90			1.00	
Satd. Flow (perm)		1833			1717			1582			1881	
Peak-hour factor, PHF	0.90	0.90	0.90	0.78	0.78	0.78	0.85	0.85	0.85	0.82	0.82	0.82
Adj. Flow (vph)	36	491	82	22	262	44	39	264	42	5	377	44
RTOR Reduction (vph)	0	3	0	0	3	0	0	5	0	0	5	0
Lane Group Flow (vph)	0	606	0	0	325	0	0	340	0	0	421	0
Heavy Vehicles (%)	0%	2%	1%	0%	3%	6%	0%	3%	6%	2%	2%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		34.2			34.2			19.7			19.7	
Effective Green, g (s)		36.2			36.2			21.7			21.7	
Actuated g/C Ratio		0.55			0.55			0.33			0.33	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1006			943			520			619	
v/s Ratio Prot												
v/s Ratio Perm		c0.33			0.19			0.21			c0.22	
v/c Ratio		0.60			0.34			0.65			0.68	
Uniform Delay, d1		10.0			8.3			18.9			19.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.0			0.2			2.9			3.1	
Delay (s)		11.0			8.5			21.8			22.2	
Level of Service		B			A			C			C	
Approach Delay (s)		11.0			8.5			21.8			22.2	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	65.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	351	64	33	509	62	80	361	38	48	295	57
Future Volume (vph)	36	351	64	33	509	62	80	361	38	48	295	57
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981			0.986			0.989			0.981	
Flt Protected		0.996			0.997			0.992			0.994	
Satd. Flow (prot)	0	1898	0	0	1848	0	0	1785	0	0	1914	0
Flt Permitted		0.911			0.957			0.836			0.891	
Satd. Flow (perm)	0	1736	0	0	1774	0	0	1505	0	0	1716	0
Satd. Flow (RTOR)		8			5			5			10	
Adj. Flow (vph)	41	403	74	38	578	70	86	388	41	51	314	61
Lane Group Flow (vph)	0	518	0	0	686	0	0	515	0	0	426	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	40.0	40.0		40.0	40.0		54.0	54.0		54.0	54.0	
Total Split (%)	35.7%	35.7%		35.7%	35.7%		48.2%	48.2%		48.2%	48.2%	
Maximum Green (s)	34.0	34.0		34.0	34.0		48.0	48.0		48.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0			-2.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.66			0.85			0.82			0.59	
Control Delay		26.4			35.8			33.3			22.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		26.4			35.8			33.3			22.1	
Queue Length 50th (ft)		181			277			204			146	
Queue Length 95th (ft)		#528			#801			446			313	
Internal Link Dist (ft)		788			850			143			500	
Turn Bay Length (ft)												
Base Capacity (vph)		787			803			945			1079	
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		0.66			0.85			0.54			0.39	

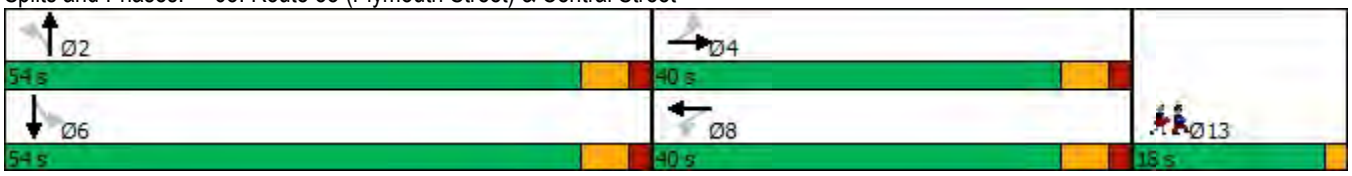
Intersection Summary
Cycle Length: 112

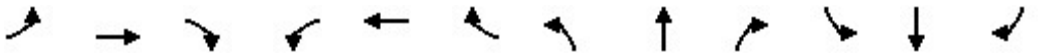
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	16%
Maximum Green (s)	16.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	10.0
Pedestrian Calls (#/hr)	2
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 82.4
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 68: Route 58 (Plymouth Street) & Central Street

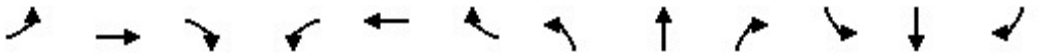




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	351	64	33	509	62	80	361	38	48	295	57
Future Volume (vph)	36	351	64	33	509	62	80	361	38	48	295	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	12	12	12	11	11	11	13	13	13
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0.99			0.99			0.98	
Flt Protected		1.00			1.00			0.99			0.99	
Satd. Flow (prot)		1898			1849			1785			1914	
Flt Permitted		0.91			0.96			0.84			0.89	
Satd. Flow (perm)		1735			1774			1505			1715	
Peak-hour factor, PHF	0.87	0.87	0.87	0.88	0.88	0.88	0.93	0.93	0.93	0.94	0.94	0.94
Adj. Flow (vph)	41	403	74	38	578	70	86	388	41	51	314	61
RTOR Reduction (vph)	0	4	0	0	3	0	0	3	0	0	6	0
Lane Group Flow (vph)	0	514	0	0	683	0	0	512	0	0	420	0
Heavy Vehicles (%)	0%	1%	2%	0%	1%	2%	1%	1%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.1			35.1			32.2			32.2	
Effective Green, g (s)		37.1			37.1			34.2			34.2	
Actuated g/C Ratio		0.44			0.44			0.41			0.41	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		769			786			614			700	
v/s Ratio Prot												
v/s Ratio Perm		0.30			c0.39			c0.34			0.24	
v/c Ratio		0.67			0.87			0.83			0.60	
Uniform Delay, d1		18.4			21.1			22.2			19.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.2			10.1			9.5			1.5	
Delay (s)		20.6			31.2			31.7			20.8	
Level of Service		C			C			C			C	
Approach Delay (s)		20.6			31.2			31.7			20.8	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	83.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	328	56	43	397	44	55	214	42	40	241	56
Future Volume (vph)	42	328	56	43	397	44	55	214	42	40	241	56
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982			0.988			0.982			0.978	
Flt Protected		0.995			0.996			0.991			0.994	
Satd. Flow (prot)	0	1918	0	0	1854	0	0	1775	0	0	1902	0
Flt Permitted		0.918			0.933			0.816			0.909	
Satd. Flow (perm)	0	1770	0	0	1737	0	0	1462	0	0	1739	0
Satd. Flow (RTOR)		7			5			9			12	
Adj. Flow (vph)	45	353	60	47	436	48	65	252	49	47	284	66
Lane Group Flow (vph)	0	458	0	0	531	0	0	366	0	0	397	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	40.0	40.0		40.0	40.0		54.0	54.0		54.0	54.0	
Total Split (%)	35.7%	35.7%		35.7%	35.7%		48.2%	48.2%		48.2%	48.2%	
Maximum Green (s)	34.0	34.0		34.0	34.0		48.0	48.0		48.0	48.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0			-2.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.50			0.59			0.75			0.68	
Control Delay		17.1			19.4			31.6			26.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		17.1			19.4			31.6			26.9	
Queue Length 50th (ft)		101			127			125			131	
Queue Length 95th (ft)		369			#499			265			269	
Internal Link Dist (ft)		788			850			143			500	
Turn Bay Length (ft)												
Base Capacity (vph)		923			905			1058			1259	
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		0.50			0.59			0.35			0.32	

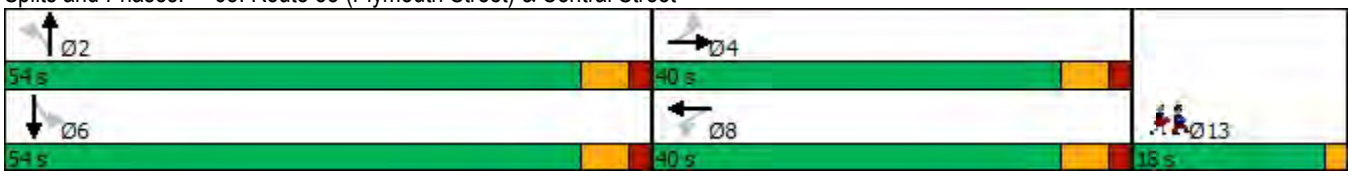
Intersection Summary
Cycle Length: 112

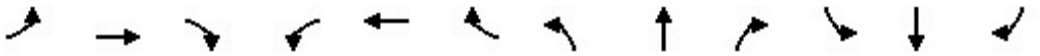
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	16%
Maximum Green (s)	16.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	10.0
Pedestrian Calls (#/hr)	2
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 71.7
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 68: Route 58 (Plymouth Street) & Central Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	328	56	43	397	44	55	214	42	40	241	56
Future Volume (vph)	42	328	56	43	397	44	55	214	42	40	241	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	12	12	12	11	11	11	13	13	13
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0.99			0.98			0.98	
Flt Protected		1.00			1.00			0.99			0.99	
Satd. Flow (prot)		1919			1853			1775			1901	
Flt Permitted		0.92			0.93			0.82			0.91	
Satd. Flow (perm)		1771			1736			1462			1739	
Peak-hour factor, PHF	0.93	0.93	0.93	0.91	0.91	0.91	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	45	353	60	47	436	48	65	252	49	47	284	66
RTOR Reduction (vph)	0	3	0	0	2	0	0	6	0	0	8	0
Lane Group Flow (vph)	0	455	0	0	529	0	0	360	0	0	389	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	1%	0%	3%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.1			35.1			21.6			21.6	
Effective Green, g (s)		37.1			37.1			23.6			23.6	
Actuated g/C Ratio		0.51			0.51			0.32			0.32	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		900			882			472			562	
v/s Ratio Prot												
v/s Ratio Perm		0.26			c0.30			c0.25			0.22	
v/c Ratio		0.51			0.60			0.76			0.69	
Uniform Delay, d1		11.9			12.7			22.2			21.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.4			1.1			7.2			3.7	
Delay (s)		12.3			13.8			29.3			25.2	
Level of Service		B			B			C			C	
Approach Delay (s)		12.3			13.8			29.3			25.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	73.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Route 58 at Centre Avenue (Route 123)

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	59	189	38	43	433	76	39	281	51	52	217	29
Future Volume (vph)	59	189	38	43	433	76	39	281	51	52	217	29
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975			0.978			0.977			0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	1822	0	1652	1717	0	1685	1820	0	1685	1827	0
Flt Permitted	0.196			0.593			0.413			0.191		
Satd. Flow (perm)	348	1822	0	1031	1717	0	732	1820	0	339	1827	0
Satd. Flow (RTOR)		10			7			6			4	
Adj. Flow (vph)	70	225	45	44	446	78	46	335	61	61	255	34
Lane Group Flow (vph)	70	270	0	44	524	0	46	396	0	61	289	0
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		2	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	24.0		24.0	24.0		9.5	11.0		10.0	11.0	
Total Split (s)	14.0	70.0		56.0	56.0		22.0	23.0		22.0	23.0	
Total Split (%)	10.2%	51.1%		40.9%	40.9%		16.1%	16.8%		16.1%	16.8%	
Maximum Green (s)	10.0	64.0		50.0	50.0		18.0	17.0		18.0	17.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	-2.0		-2.0	-2.0		0.0	-2.0		0.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.23	0.29		0.10	0.74		0.14	0.82		0.24	0.54	
Control Delay	10.9	10.7		16.1	27.4		22.1	49.9		23.5	35.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.9	10.7		16.1	27.4		22.1	49.9		23.5	35.3	
Queue Length 50th (ft)	16	68		14	225		15	201		21	137	
Queue Length 95th (ft)	34	107		36	365		44	#449		55	#290	
Internal Link Dist (ft)		950			744			1332			1155	
Turn Bay Length (ft)	140			220			100					
Base Capacity (vph)	364	1470		698	1165		508	480		460	534	
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	0.19	0.18		0.06	0.45		0.09	0.82		0.13	0.54	

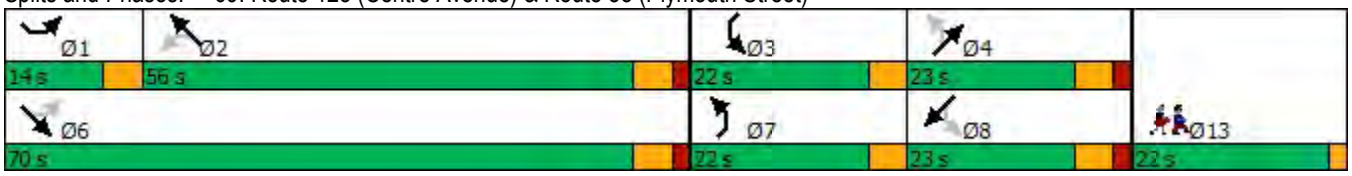
Intersection Summary
Cycle Length: 137

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	16%
Maximum Green (s)	20.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	14.0
Pedestrian Calls (#/hr)	0
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 79.3
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 69: Route 123 (Centre Avenue) & Route 58 (Plymouth Street)





Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	59	189	38	43	433	76	39	281	51	52	217	29
Future Volume (vph)	59	189	38	43	433	76	39	281	51	52	217	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	10	10	10	10	12	12	10	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1685	1822		1652	1717		1685	1820		1685	1828	
Flt Permitted	0.20	1.00		0.59	1.00		0.41	1.00		0.19	1.00	
Satd. Flow (perm)	348	1822		1031	1717		733	1820		339	1828	
Peak-hour factor, PHF	0.84	0.84	0.84	0.97	0.97	0.97	0.84	0.84	0.84	0.85	0.85	0.85
Adj. Flow (vph)	70	225	45	44	446	78	46	335	61	61	255	34
RTOR Reduction (vph)	0	5	0	0	4	0	0	4	0	0	3	0
Lane Group Flow (vph)	70	265	0	44	520	0	46	392	0	61	286	0
Heavy Vehicles (%)	0%	2%	0%	2%	1%	1%	0%	2%	2%	0%	2%	3%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	39.9	39.9		30.4	30.4		23.8	19.4		26.8	20.9	
Effective Green, g (s)	39.9	41.9		32.4	32.4		23.8	21.4		26.8	22.9	
Actuated g/C Ratio	0.49	0.52		0.40	0.40		0.29	0.26		0.33	0.28	
Clearance Time (s)	4.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	261	940		411	685		266	479		209	515	
v/s Ratio Prot	0.02	c0.15			c0.30		0.01	c0.22		c0.02	0.16	
v/s Ratio Perm	0.11			0.04			0.04			0.07		
v/c Ratio	0.27	0.28		0.11	0.76		0.17	0.82		0.29	0.56	
Uniform Delay, d1	13.7	11.1		15.3	21.0		21.1	28.1		20.3	24.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.2		0.1	4.8		0.3	10.4		0.8	1.3	
Delay (s)	14.2	11.3		15.4	25.9		21.4	38.5		21.0	26.1	
Level of Service	B	B		B	C		C	D		C	C	
Approach Delay (s)		11.9			25.1			36.7			25.2	
Approach LOS		B			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	81.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	129	478	30	51	312	151	31	378	47	195	335	102
Future Volume (vph)	129	478	30	51	312	151	31	378	47	195	335	102
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.951			0.983			0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	1865	0	1685	1675	0	1668	1868	0	1685	1825	0
Flt Permitted	0.158			0.375			0.198			0.165		
Satd. Flow (perm)	280	1865	0	665	1675	0	348	1868	0	293	1825	0
Satd. Flow (RTOR)		3			21			4			9	
Adj. Flow (vph)	137	509	32	54	332	161	34	415	52	217	372	113
Lane Group Flow (vph)	137	541	0	54	493	0	34	467	0	217	485	0
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		2	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	24.0		24.0	24.0		9.5	11.0		10.0	11.0	
Total Split (s)	14.0	70.0		56.0	56.0		22.0	23.0		22.0	23.0	
Total Split (%)	10.2%	51.1%		40.9%	40.9%		16.1%	16.8%		16.1%	16.8%	
Maximum Green (s)	10.0	64.0		50.0	50.0		18.0	17.0		18.0	17.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	-2.0		-2.0	-2.0		0.0	-2.0		0.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.52	0.60		0.23	0.81		0.18	1.29		0.72	0.85	
Control Delay	24.6	24.2		29.4	42.6		32.6	185.8		44.4	53.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	24.6	24.2		29.4	42.6		32.6	185.8		44.4	53.8	
Queue Length 50th (ft)	41	209		22	247		12	~352		89	279	
Queue Length 95th (ft)	110	462		68	510		49	#842		#272	#774	
Internal Link Dist (ft)		950			744			1332			1155	
Turn Bay Length (ft)	140			220			100					
Base Capacity (vph)	277	1247		350	891		365	362		362	570	
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	0.49	0.43		0.15	0.55		0.09	1.29		0.60	0.85	

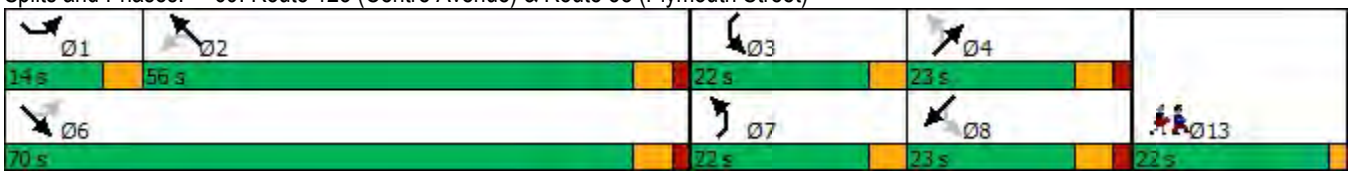
Intersection Summary
Cycle Length: 137

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	16%
Maximum Green (s)	20.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	14.0
Pedestrian Calls (#/hr)	11
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 105.2
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
~ 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: 69: Route 123 (Centre Avenue) & Route 58 (Plymouth Street)





Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	129	478	30	51	312	151	31	378	47	195	335	102
Future Volume (vph)	129	478	30	51	312	151	31	378	47	195	335	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	10	10	10	10	12	12	10	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.95		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1685	1866		1685	1675		1668	1868		1685	1825	
Flt Permitted	0.16	1.00		0.38	1.00		0.20	1.00		0.17	1.00	
Satd. Flow (perm)	280	1866		665	1675		348	1868		293	1825	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.91	0.91	0.91	0.90	0.90	0.90
Adj. Flow (vph)	137	509	32	54	332	161	34	415	52	217	372	113
RTOR Reduction (vph)	0	2	0	0	14	0	0	3	0	0	6	0
Lane Group Flow (vph)	137	539	0	54	479	0	34	464	0	217	479	0
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	1%	0%	0%	0%	0%	2%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	48.8	48.8		35.4	35.4		24.5	20.2		38.7	30.4	
Effective Green, g (s)	48.8	50.8		37.4	37.4		24.5	22.2		38.7	32.4	
Actuated g/C Ratio	0.45	0.47		0.35	0.35		0.23	0.21		0.36	0.30	
Clearance Time (s)	4.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	249	880		230	581		131	385		292	549	
v/s Ratio Prot	0.05	c0.29			c0.29		0.01	c0.25		c0.10	c0.26	
v/s Ratio Perm	0.20			0.08			0.05			0.17		
v/c Ratio	0.55	0.61		0.23	0.82		0.26	1.20		0.74	0.87	
Uniform Delay, d1	21.4	21.1		25.0	32.2		33.7	42.8		27.5	35.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	1.3		0.5	9.3		1.1	114.3		9.8	14.2	
Delay (s)	24.0	22.4		25.5	41.5		34.7	157.1		37.3	49.9	
Level of Service	C	C		C	D		C	F		D	D	
Approach Delay (s)		22.7			39.9			148.8			46.0	
Approach LOS		C			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	59.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	107.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	144	341	31	58	286	168	40	339	40	185	334	120
Future Volume (vph)	144	341	31	58	286	168	40	339	40	185	334	120
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.944			0.984			0.960	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	1877	0	1685	1674	0	1685	1870	0	1668	1824	0
Flt Permitted	0.161			0.520			0.213			0.175		
Satd. Flow (perm)	286	1877	0	922	1674	0	378	1870	0	307	1824	0
Satd. Flow (RTOR)		5			25			4			11	
Adj. Flow (vph)	160	379	34	64	314	185	46	390	46	203	367	132
Lane Group Flow (vph)	160	413	0	64	499	0	46	436	0	203	499	0
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		2	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	24.0		24.0	24.0		9.5	11.0		10.0	11.0	
Total Split (s)	14.0	70.0		56.0	56.0		22.0	23.0		22.0	23.0	
Total Split (%)	10.2%	51.1%		40.9%	40.9%		16.1%	16.8%		16.1%	16.8%	
Maximum Green (s)	10.0	64.0		50.0	50.0		18.0	17.0		18.0	17.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	-2.0		-2.0	-2.0		0.0	-2.0		0.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.57	0.44		0.19	0.81		0.22	1.15		0.66	0.94	
Control Delay	24.1	18.3		25.1	39.2		28.5	130.5		37.0	63.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	24.1	18.3		25.1	39.2		28.5	130.5		37.0	63.6	
Queue Length 50th (ft)	48	141		25	247		17	~310		83	294	
Queue Length 95th (ft)	#127	327		74	514		59	#744		#239	#811	
Internal Link Dist (ft)		950			744			1332			1155	
Turn Bay Length (ft)	140			220			100					
Base Capacity (vph)	291	1316		508	935		390	380		377	533	
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	0.55	0.31		0.13	0.53		0.12	1.15		0.54	0.94	

Intersection Summary

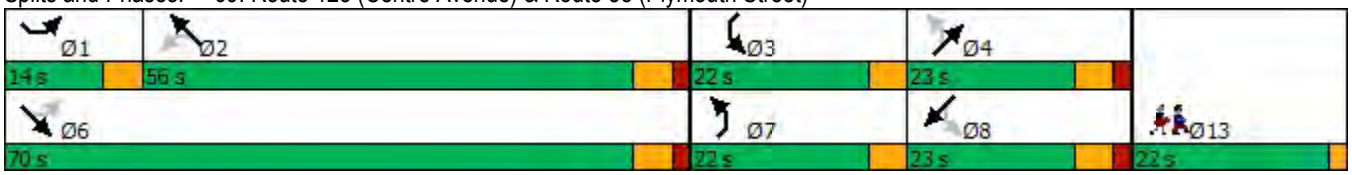
Cycle Length: 137

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	16%
Maximum Green (s)	20.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	14.0
Pedestrian Calls (#/hr)	4
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 98.4
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
~ 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: 69: Route 123 (Centre Avenue) & Route 58 (Plymouth Street)



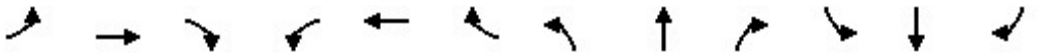


Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	144	341	31	58	286	168	40	339	40	185	334	120
Future Volume (vph)	144	341	31	58	286	168	40	339	40	185	334	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	10	10	10	10	12	12	10	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.94		1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1685	1877		1685	1675		1685	1870		1668	1825	
Flt Permitted	0.16	1.00		0.52	1.00		0.21	1.00		0.18	1.00	
Satd. Flow (perm)	286	1877		923	1675		377	1870		308	1825	
Peak-hour factor, PHF	0.90	0.90	0.90	0.91	0.91	0.91	0.87	0.87	0.87	0.91	0.91	0.91
Adj. Flow (vph)	160	379	34	64	314	185	46	390	46	203	367	132
RTOR Reduction (vph)	0	3	0	0	16	0	0	3	0	0	8	0
Lane Group Flow (vph)	160	410	0	64	483	0	46	433	0	203	491	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6			2		7	4		3	8	
Permitted Phases	6			2			4			8		
Actuated Green, G (s)	47.1	47.1		33.5	33.5		25.0	18.8		36.5	26.3	
Effective Green, g (s)	47.1	49.1		35.5	35.5		25.0	20.8		36.5	28.3	
Actuated g/C Ratio	0.47	0.49		0.35	0.35		0.25	0.21		0.36	0.28	
Clearance Time (s)	4.0	6.0		6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	267	917		326	591		174	387		297	513	
v/s Ratio Prot	c0.06	0.22			c0.29		0.02	c0.23		c0.09	c0.27	
v/s Ratio Perm	0.22			0.07			0.05			0.15		
v/c Ratio	0.60	0.45		0.20	0.82		0.26	1.12		0.68	0.96	
Uniform Delay, d1	19.5	16.8		22.6	29.5		30.3	39.9		25.2	35.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.6	0.3		0.3	8.6		0.8	81.9		6.4	28.9	
Delay (s)	23.1	17.2		22.9	38.1		31.1	121.7		31.6	64.4	
Level of Service	C	B		C	D		C	F		C	E	
Approach Delay (s)		18.8			36.4			113.1			54.9	
Approach LOS		B			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	53.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Route 58 at Summer Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	125	27	58	119	45	50	516	113	44	245	23
Future Volume (vph)	11	125	27	58	119	45	50	516	113	44	245	23
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977			0.972			0.978			0.990	
Flt Protected		0.997			0.987			0.996			0.993	
Satd. Flow (prot)	0	1802	0	0	1815	0	0	2017	0	0	2007	0
Flt Permitted		0.968			0.890			0.954			0.847	
Satd. Flow (perm)	0	1750	0	0	1637	0	0	1932	0	0	1712	0
Satd. Flow (RTOR)		14			18			18			7	
Adj. Flow (vph)	13	147	32	69	142	54	63	645	141	47	263	25
Lane Group Flow (vph)	0	192	0	0	265	0	0	849	0	0	335	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		22.5	22.5		22.5	22.5	
Total Split (s)	19.0	19.0		19.0	19.0		30.0	30.0		30.0	30.0	
Total Split (%)	28.8%	28.8%		28.8%	28.8%		45.5%	45.5%		45.5%	45.5%	
Maximum Green (s)	14.0	14.0		14.0	14.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.39			0.57			0.79			0.35	
Control Delay		15.1			18.8			16.5			7.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		15.1			18.8			16.5			7.5	
Queue Length 50th (ft)		39			57			169			47	
Queue Length 95th (ft)		75			103			244			90	
Internal Link Dist (ft)		1015			1040			948			978	
Turn Bay Length (ft)												
Base Capacity (vph)		560			527			1079			952	
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		0.34			0.50			0.79			0.35	

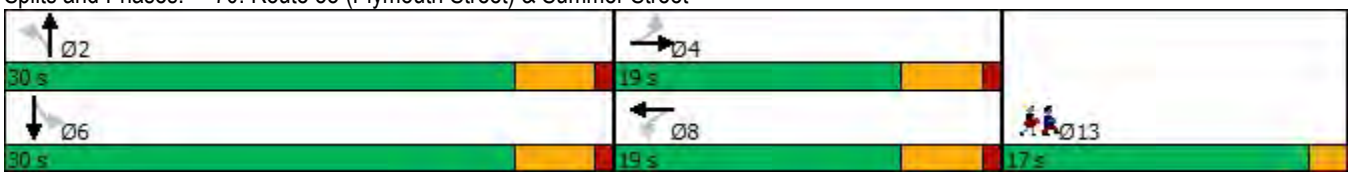
Intersection Summary
Cycle Length: 66

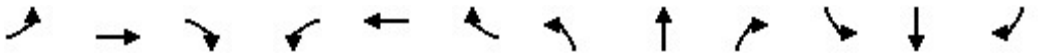
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	26%
Maximum Green (s)	15.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	0
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 47.7
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 70: Route 58 (Plymouth Street) & Summer Street

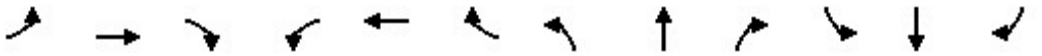




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	125	27	58	119	45	50	516	113	44	245	23
Future Volume (vph)	11	125	27	58	119	45	50	516	113	44	245	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	15	15	15	15	15	15
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0.97			0.98			0.99	
Flt Protected		1.00			0.99			1.00			0.99	
Satd. Flow (prot)		1802			1817			2017			2007	
Flt Permitted		0.97			0.89			0.95			0.85	
Satd. Flow (perm)		1751			1637			1930			1712	
Peak-hour factor, PHF	0.85	0.85	0.85	0.84	0.84	0.84	0.80	0.80	0.80	0.93	0.93	0.93
Adj. Flow (vph)	13	147	32	69	142	54	62	645	141	47	263	25
RTOR Reduction (vph)	0	10	0	0	13	0	0	8	0	0	3	0
Lane Group Flow (vph)	0	182	0	0	252	0	0	841	0	0	332	0
Heavy Vehicles (%)	0%	2%	7%	0%	0%	2%	0%	1%	1%	0%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		12.3			12.3			25.5			25.5	
Effective Green, g (s)		13.3			13.3			26.5			26.5	
Actuated g/C Ratio		0.28			0.28			0.55			0.55	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		487			455			1069			949	
v/s Ratio Prot												
v/s Ratio Perm		0.10			c0.15			c0.44			0.19	
v/c Ratio		0.37			0.55			0.79			0.35	
Uniform Delay, d1		13.9			14.7			8.4			5.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.5			1.5			3.9			0.2	
Delay (s)		14.4			16.2			12.3			6.1	
Level of Service		B			B			B			A	
Approach Delay (s)		14.4			16.2			12.3			6.1	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	47.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	165	86	123	136	53	37	397	95	49	691	32
Future Volume (vph)	25	165	86	123	136	53	37	397	95	49	691	32
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.958			0.977			0.976			0.994	
Flt Protected		0.996			0.981			0.997			0.997	
Satd. Flow (prot)	0	1807	0	0	1814	0	0	2019	0	0	2050	0
Flt Permitted		0.951			0.567			0.926			0.943	
Satd. Flow (perm)	0	1726	0	0	1048	0	0	1875	0	0	1939	0
Satd. Flow (RTOR)		32			14			20			4	
Adj. Flow (vph)	34	226	118	131	145	56	38	409	98	55	776	36
Lane Group Flow (vph)	0	378	0	0	332	0	0	545	0	0	867	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		22.5	22.5		22.5	22.5	
Total Split (s)	19.0	19.0		19.0	19.0		30.0	30.0		30.0	30.0	
Total Split (%)	28.8%	28.8%		28.8%	28.8%		45.5%	45.5%		45.5%	45.5%	
Maximum Green (s)	14.0	14.0		14.0	14.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.72			1.06			0.57			0.89	
Control Delay		27.6			91.5			13.4			27.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		27.6			91.5			13.4			27.6	
Queue Length 50th (ft)		84			~91			86			185	
Queue Length 95th (ft)		#196			#324			284			#617	
Internal Link Dist (ft)		1015			1040			948			978	
Turn Bay Length (ft)												
Base Capacity (vph)		523			314			953			977	
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		0.72			1.06			0.57			0.89	

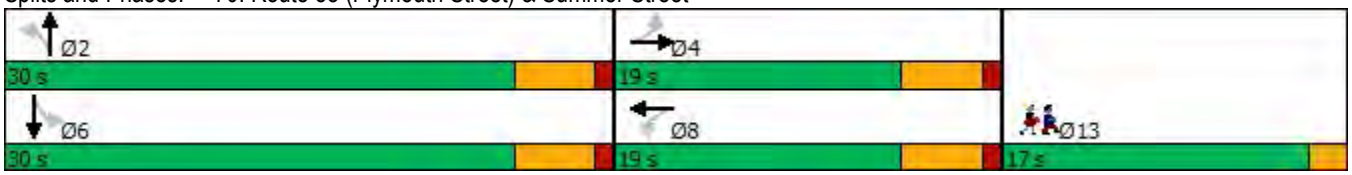
Intersection Summary
Cycle Length: 66

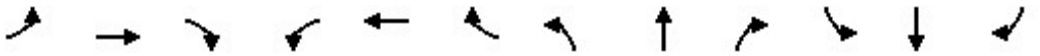
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	26%
Maximum Green (s)	15.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	1
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 52.4
Natural Cycle: 120
Control Type: Actuated-Uncoordinated
~ 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: 70: Route 58 (Plymouth Street) & Summer Street

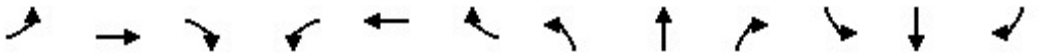




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	165	86	123	136	53	37	397	95	49	691	32
Future Volume (vph)	25	165	86	123	136	53	37	397	95	49	691	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	15	15	15	15	15	15
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.96			0.98			0.98			0.99	
Flt Protected		1.00			0.98			1.00			1.00	
Satd. Flow (prot)		1806			1814			2017			2051	
Flt Permitted		0.95			0.57			0.93			0.94	
Satd. Flow (perm)		1725			1048			1874			1941	
Peak-hour factor, PHF	0.73	0.73	0.73	0.94	0.94	0.94	0.97	0.97	0.97	0.89	0.89	0.89
Adj. Flow (vph)	34	226	118	131	145	56	38	409	98	55	776	36
RTOR Reduction (vph)	0	23	0	0	10	0	0	10	0	0	2	0
Lane Group Flow (vph)	0	355	0	0	322	0	0	535	0	0	865	0
Heavy Vehicles (%)	0%	0%	1%	1%	0%	0%	0%	1%	0%	2%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		14.2			14.2			25.4			25.4	
Effective Green, g (s)		15.2			15.2			26.4			26.4	
Actuated g/C Ratio		0.28			0.28			0.49			0.49	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		485			294			916			948	
v/s Ratio Prot												
v/s Ratio Perm		0.21			c0.31			0.29			c0.45	
v/c Ratio		0.73			1.10			0.58			0.91	
Uniform Delay, d1		17.6			19.4			9.9			12.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		5.6			80.3			1.0			12.8	
Delay (s)		23.2			99.7			10.8			25.5	
Level of Service		C			F			B			C	
Approach Delay (s)		23.2			99.7			10.8			25.5	
Approach LOS		C			F			B			C	

Intersection Summary			
HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	94.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	106	78	58	106	53	49	410	75	48	529	14
Future Volume (vph)	18	106	78	58	106	53	49	410	75	48	529	14
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.948			0.967			0.981			0.997	
Flt Protected		0.996			0.987			0.995			0.996	
Satd. Flow (prot)	0	1794	0	0	1796	0	0	2023	0	0	2057	0
Flt Permitted		0.959			0.871			0.921			0.930	
Satd. Flow (perm)	0	1727	0	0	1585	0	0	1872	0	0	1921	0
Satd. Flow (RTOR)		44			23			15			2	
Adj. Flow (vph)	21	122	90	61	112	56	56	466	85	51	557	15
Lane Group Flow (vph)	0	233	0	0	229	0	0	607	0	0	623	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		22.5	22.5		22.5	22.5	
Total Split (s)	19.0	19.0		19.0	19.0		30.0	30.0		30.0	30.0	
Total Split (%)	28.8%	28.8%		28.8%	28.8%		45.5%	45.5%		45.5%	45.5%	
Maximum Green (s)	14.0	14.0		14.0	14.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.46			0.50			0.66			0.67	
Control Delay		16.6			19.3			15.7			16.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		16.6			19.3			15.7			16.0	
Queue Length 50th (ft)		36			41			91			96	
Queue Length 95th (ft)		124			141			#362			#393	
Internal Link Dist (ft)		1015			1040			948			978	
Turn Bay Length (ft)												
Base Capacity (vph)		631			568			1138			1163	
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		0.37			0.40			0.53			0.54	

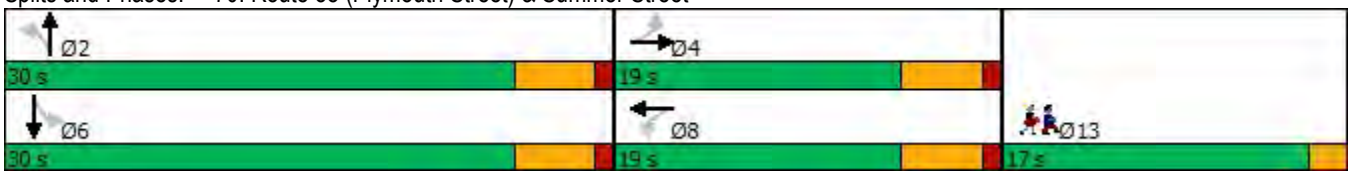
Intersection Summary
Cycle Length: 66

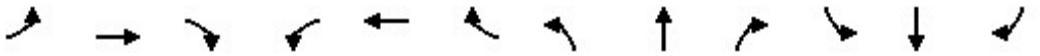
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	26%
Maximum Green (s)	15.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	1
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 45.7
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 70: Route 58 (Plymouth Street) & Summer Street



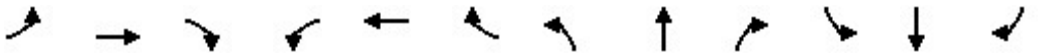


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	106	78	58	106	53	49	410	75	48	529	14
Future Volume (vph)	18	106	78	58	106	53	49	410	75	48	529	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	15	15	15	15	15	15
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.95			0.97			0.98			1.00	
Flt Protected		1.00			0.99			1.00			1.00	
Satd. Flow (prot)		1793			1796			2024			2056	
Flt Permitted		0.96			0.87			0.92			0.93	
Satd. Flow (perm)		1727			1584			1871			1921	
Peak-hour factor, PHF	0.87	0.87	0.87	0.95	0.95	0.95	0.88	0.88	0.88	0.95	0.95	0.95
Adj. Flow (vph)	21	122	90	61	112	56	56	466	85	51	557	15
RTOR Reduction (vph)	0	32	0	0	17	0	0	8	0	0	1	0
Lane Group Flow (vph)	0	201	0	0	212	0	0	599	0	0	622	0
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	1%	1%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		11.6			11.6			21.1			21.1	
Effective Green, g (s)		12.6			12.6			22.1			22.1	
Actuated g/C Ratio		0.27			0.27			0.47			0.47	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		464			426			883			907	
v/s Ratio Prot												
v/s Ratio Perm		0.12			c0.13			0.32			c0.32	
v/c Ratio		0.43			0.50			0.68			0.69	
Uniform Delay, d1		14.1			14.4			9.6			9.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.6			0.9			2.1			2.2	
Delay (s)		14.8			15.4			11.7			11.8	
Level of Service		B			B			B			B	
Approach Delay (s)		14.8			15.4			11.7			11.8	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	46.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Route 18 at Brockton Avenue (Route 123)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	244	372	40	20	372	11	203	542	5	10	307	248
Future Volume (vph)	244	372	40	20	372	11	203	542	5	10	307	248
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.991			0.996			0.999			0.934	
Flt Protected		0.982			0.997			0.987			0.999	
Satd. Flow (prot)	0	3287	0	0	3348	0	0	3328	0	0	3083	0
Flt Permitted		0.630			0.884			0.583			0.933	
Satd. Flow (perm)	0	2109	0	0	2968	0	0	1966	0	0	2879	0
Satd. Flow (RTOR)		4			2						110	
Adj. Flow (vph)	271	413	44	22	400	12	218	583	5	11	345	279
Lane Group Flow (vph)	0	728	0	0	434	0	0	806	0	0	635	0
Turn Type	Prot	NA		Perm	NA		Prot	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases				8						6		
Detector Phase	7	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	22.5		22.5	22.5		10.0	22.5		22.5	22.5	
Total Split (s)	22.0	84.0		62.0	62.0		22.0	82.0		60.0	60.0	
Total Split (%)	11.9%	45.4%		33.5%	33.5%		11.9%	44.3%		32.4%	32.4%	
Maximum Green (s)	18.0	78.0		56.0	56.0		18.0	76.0		54.0	54.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		2.0	2.0		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0			-2.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		Min	Min		None	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		67.75dl			0.34			11.68			0.50	
Control Delay		2003.7			35.7			4840.0			33.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		2003.7			35.7			4840.0			33.3	
Queue Length 50th (ft)		~794			183			~986			245	
Queue Length 95th (ft)		#933			231			#1126			302	
Internal Link Dist (ft)		1256			1253			752			1269	
Turn Bay Length (ft)												
Base Capacity (vph)		135			1284			69			1277	
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		5.39			0.34			11.68			0.50	

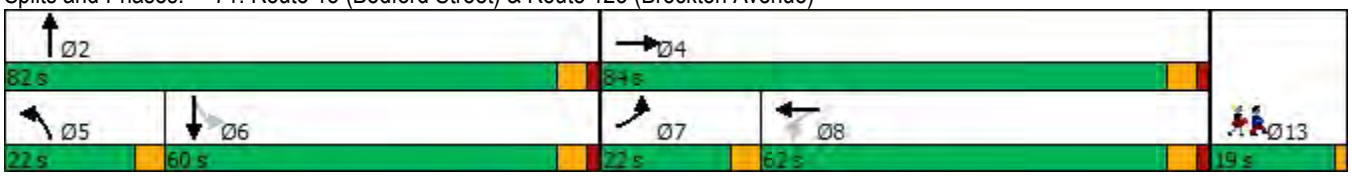
Intersection Summary
Cycle Length: 185

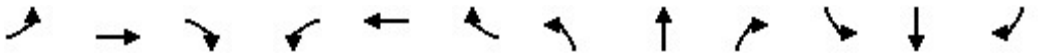
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	19.0
Total Split (s)	19.0
Total Split (%)	10%
Maximum Green (s)	17.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	Max
Walk Time (s)	6.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	4
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 185
Natural Cycle: 125
Control Type: Actuated-Uncoordinated
~ 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.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 71: Route 18 (Bedford Street) & Route 123 (Brockton Avenue)

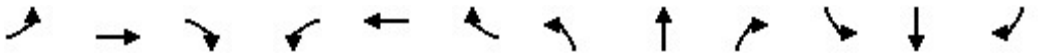




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	244	372	40	20	372	11	203	542	5	10	307	248
Future Volume (vph)	244	372	40	20	372	11	203	542	5	10	307	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.99			1.00			1.00			0.93	
Flt Protected		0.98			1.00			0.99			1.00	
Satd. Flow (prot)		3286			3349			3328			3083	
Flt Permitted		0.63			0.88			0.58			0.93	
Satd. Flow (perm)		2108			2966			1967			2880	
Peak-hour factor, PHF	0.90	0.90	0.90	0.93	0.93	0.93	0.93	0.93	0.93	0.89	0.89	0.89
Adj. Flow (vph)	271	413	44	22	400	12	218	583	5	11	345	279
RTOR Reduction (vph)	0	2	0	0	1	0	0	0	0	0	64	0
Lane Group Flow (vph)	0	726	0	0	433	0	0	806	0	0	571	0
Heavy Vehicles (%)	3%	3%	8%	5%	3%	18%	4%	3%	20%	10%	6%	5%
Turn Type	Prot	NA		Perm	NA		Prot	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases				8						6		
Actuated Green, G (s)		78.0			78.0			76.0			76.0	
Effective Green, g (s)		80.0			80.0			78.0			78.0	
Actuated g/C Ratio		0.43			0.43			0.42			0.42	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		911			1282			829			1214	
v/s Ratio Prot												
v/s Ratio Perm		c0.34			0.15			c0.41			0.20	
v/c Ratio		67.75dl			0.34			0.97			0.47	
Uniform Delay, d1		45.5			34.9			52.4			38.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		4.9			0.2			24.5			0.3	
Delay (s)		50.3			35.0			76.9			38.9	
Level of Service		D			D			E			D	
Approach Delay (s)		50.3			35.0			76.9			38.9	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	53.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	185.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	261	483	36	47	468	13	128	419	9	18	595	272
Future Volume (vph)	261	483	36	47	468	13	128	419	9	18	595	272
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.993			0.996			0.998			0.954	
Flt Protected		0.984			0.996			0.989			0.999	
Satd. Flow (prot)	0	3378	0	0	3431	0	0	3393	0	0	3316	0
Flt Permitted		0.586			0.682			0.513			0.932	
Satd. Flow (perm)	0	2011	0	0	2350	0	0	1760	0	0	3093	0
Satd. Flow (RTOR)		3			1			1			39	
Adj. Flow (vph)	284	525	39	52	514	14	132	432	9	19	626	286
Lane Group Flow (vph)	0	848	0	0	580	0	0	573	0	0	931	0
Turn Type	Prot	NA		Perm	NA		Prot	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases				8						6		
Detector Phase	7	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	22.5		22.5	22.5		10.0	22.5		22.5	22.5	
Total Split (s)	22.0	84.0		62.0	62.0		22.0	82.0		60.0	60.0	
Total Split (%)	11.9%	45.4%		33.5%	33.5%		11.9%	44.3%		32.4%	32.4%	
Maximum Green (s)	18.0	78.0		56.0	56.0		18.0	76.0		54.0	54.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		2.0	2.0		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0			-2.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		Min	Min		None	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		94.67dl			0.57			573.00			0.70	
Control Delay		3726.0			42.2			259190.8			45.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		3726.0			42.2			259190.8			45.4	
Queue Length 50th (ft)		~1012			277			~756			470	
Queue Length 95th (ft)		#1152			345			#887			553	
Internal Link Dist (ft)		1256			1253			752			1269	
Turn Bay Length (ft)												
Base Capacity (vph)		92			1016			4			1326	
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		9.22			0.57			143.25			0.70	

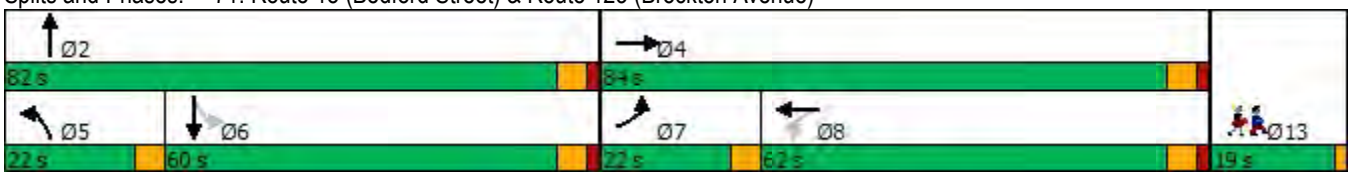
Intersection Summary
Cycle Length: 185

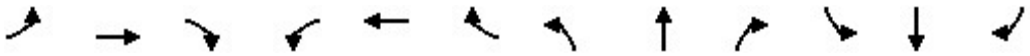
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	19.0
Total Split (s)	19.0
Total Split (%)	10%
Maximum Green (s)	17.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	Max
Walk Time (s)	6.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	3
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 185
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
~ 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.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 71: Route 18 (Bedford Street) & Route 123 (Brockton Avenue)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	261	483	36	47	468	13	128	419	9	18	595	272
Future Volume (vph)	261	483	36	47	468	13	128	419	9	18	595	272
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.99			1.00			1.00			0.95	
Flt Protected		0.98			1.00			0.99			1.00	
Satd. Flow (prot)		3376			3431			3391			3315	
Flt Permitted		0.59			0.68			0.51			0.93	
Satd. Flow (perm)		2011			2349			1759			3091	
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	284	525	39	52	514	14	132	432	9	19	626	286
RTOR Reduction (vph)	0	2	0	0	1	0	0	1	0	0	23	0
Lane Group Flow (vph)	0	846	0	0	579	0	0	572	0	0	908	0
Heavy Vehicles (%)	1%	1%	0%	0%	1%	0%	0%	2%	0%	0%	0%	1%
Turn Type	Prot	NA		Perm	NA		Prot	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases				8						6		
Actuated Green, G (s)		78.0			78.0			76.0			76.0	
Effective Green, g (s)		80.0			80.0			78.0			78.0	
Actuated g/C Ratio		0.43			0.43			0.42			0.42	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		869			1015			741			1303	
v/s Ratio Prot												
v/s Ratio Perm		c0.42			0.25			c0.33			0.29	
v/c Ratio		94.67dl			0.57			0.77			0.70	
Uniform Delay, d1		51.5			39.6			45.9			43.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		24.1			0.8			5.0			1.6	
Delay (s)		75.6			40.3			50.9			45.5	
Level of Service		E			D			D			D	
Approach Delay (s)		75.6			40.3			50.9			45.5	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	54.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	185.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	247	363	36	23	387	28	127	443	5	30	466	253
Future Volume (vph)	247	363	36	23	387	28	127	443	5	30	466	253
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.992			0.990			0.999			0.949	
Flt Protected		0.981			0.997			0.989			0.998	
Satd. Flow (prot)	0	3353	0	0	3406	0	0	3399	0	0	3274	0
Flt Permitted		0.609			0.880			0.541			0.884	
Satd. Flow (perm)	0	2082	0	0	3006	0	0	1859	0	0	2900	0
Satd. Flow (RTOR)		4			4			1			50	
Adj. Flow (vph)	268	395	39	25	425	31	134	466	5	33	512	278
Lane Group Flow (vph)	0	702	0	0	481	0	0	605	0	0	823	0
Turn Type	Prot	NA		Perm	NA		Prot	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases				8						6		
Detector Phase	7	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	22.5		22.5	22.5		10.0	22.5		22.5	22.5	
Total Split (s)	22.0	84.0		62.0	62.0		22.0	82.0		60.0	60.0	
Total Split (%)	11.9%	45.4%		33.5%	33.5%		11.9%	44.3%		32.4%	32.4%	
Maximum Green (s)	18.0	78.0		56.0	56.0		18.0	76.0		54.0	54.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		2.0	2.0		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0			-2.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag	Lead			Lag	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		Min	Min		None	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		67.00dl			0.37			134.00dl			0.66	
Control Delay		2125.4			36.2			10517.0			43.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		2125.4			36.2			10517.0			43.0	
Queue Length 50th (ft)		~775			205			~775			397	
Queue Length 95th (ft)		#913			256			#909			475	
Internal Link Dist (ft)		1256			1253			752			1269	
Turn Bay Length (ft)												
Base Capacity (vph)		124			1302			25			1251	
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		5.66			0.37			24.20			0.66	

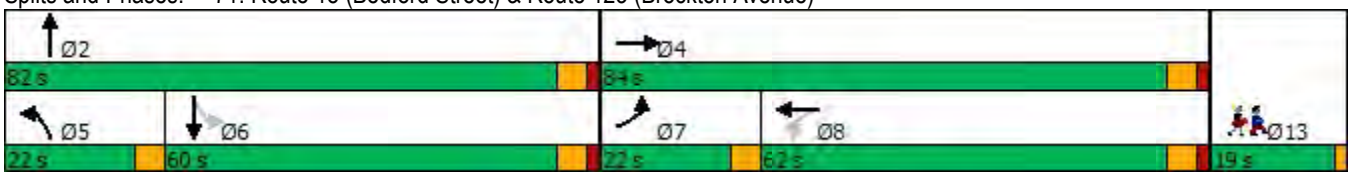
Intersection Summary
Cycle Length: 185

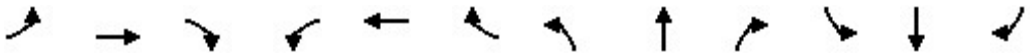
Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	19.0
Total Split (s)	19.0
Total Split (%)	10%
Maximum Green (s)	17.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	Max
Walk Time (s)	6.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	3
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 185
Natural Cycle: 95
Control Type: Actuated-Uncoordinated
~ 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.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 71: Route 18 (Bedford Street) & Route 123 (Brockton Avenue)



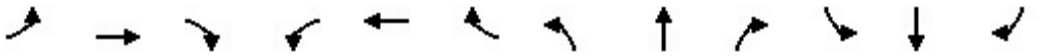


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	247	363	36	23	387	28	127	443	5	30	466	253
Future Volume (vph)	247	363	36	23	387	28	127	443	5	30	466	253
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.99			0.99			1.00			0.95	
Flt Protected		0.98			1.00			0.99			1.00	
Satd. Flow (prot)		3353			3408			3398			3275	
Flt Permitted		0.61			0.88			0.54			0.88	
Satd. Flow (perm)		2081			3007			1858			2900	
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.95	0.95	0.95	0.91	0.91	0.91
Adj. Flow (vph)	268	395	39	25	425	31	134	466	5	33	512	278
RTOR Reduction (vph)	0	2	0	0	2	0	0	1	0	0	29	0
Lane Group Flow (vph)	0	700	0	0	479	0	0	604	0	0	794	0
Heavy Vehicles (%)	1%	1%	6%	0%	1%	4%	3%	1%	0%	0%	1%	1%
Turn Type	Prot	NA		Perm	NA		Prot	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases				8						6		
Actuated Green, G (s)		78.0			78.0			76.0			76.0	
Effective Green, g (s)		80.0			80.0			78.0			78.0	
Actuated g/C Ratio		0.43			0.43			0.42			0.42	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		899			1300			783			1222	
v/s Ratio Prot												
v/s Ratio Perm		c0.34			0.16			c0.33			0.27	
v/c Ratio		67.00dl			0.37			134.00dl			0.65	
Uniform Delay, d1		44.9			35.4			45.9			42.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		4.3			0.2			4.7			1.2	
Delay (s)		49.2			35.6			50.6			43.8	
Level of Service		D			D			D			D	
Approach Delay (s)		49.2			35.6			50.6			43.8	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	185.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

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

Route 18 at Temple Street (Route 27)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	236	68	135	364	78	168	528	65	19	312	67
Future Volume (vph)	127	236	68	135	364	78	168	528	65	19	312	67
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.966			0.973			0.984			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1620	1681	0	1662	3314	0	1694	3267	0	1452	3225	0
Flt Permitted	0.332			0.287			0.299			0.353		
Satd. Flow (perm)	566	1681	0	502	3314	0	533	3267	0	540	3225	0
Satd. Flow (RTOR)		10			18			10			20	
Adj. Flow (vph)	159	295	85	161	433	93	187	587	72	23	376	81
Lane Group Flow (vph)	159	380	0	161	526	0	187	659	0	23	457	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	8.0	10.0		8.0	10.0		8.0	10.0		8.0	10.0	
Total Split (s)	15.0	34.0		15.0	34.0		13.0	40.0		13.0	40.0	
Total Split (%)	11.6%	26.4%		11.6%	26.4%		10.1%	31.0%		10.1%	31.0%	
Maximum Green (s)	12.0	29.0		12.0	29.0		10.0	35.0		10.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0		0.0	-1.0		0.0	-1.0	
Total Lost Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.41	0.69		0.44	0.49		0.54	0.58		0.09	0.60	
Control Delay	20.3	36.2		20.9	27.7		27.0	28.3		20.5	32.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.3	36.2		20.9	27.7		27.0	28.3		20.5	32.9	
Queue Length 50th (ft)	38	151		39	102		65	134		7	107	
Queue Length 95th (ft)	127	#395		136	237		163	317		28	191	
Internal Link Dist (ft)		1137			954			810			2231	
Turn Bay Length (ft)	95			115			90			90		
Base Capacity (vph)	420	611		404	1203		350	1416		306	1403	
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	0.38	0.62		0.40	0.44		0.53	0.47		0.08	0.33	

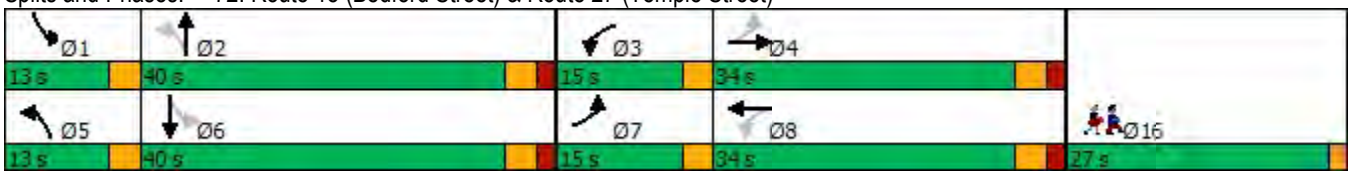
Intersection Summary
Cycle Length: 129

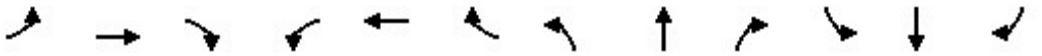
Lane Group	Ø16
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	16
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	21%
Maximum Green (s)	25.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	16.0
Pedestrian Calls (#/hr)	11
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 87.5
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 72: Route 18 (Bedford Street) & Route 27 (Temple Street)

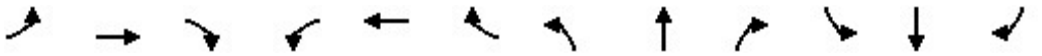




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	236	68	135	364	78	168	528	65	19	312	67
Future Volume (vph)	127	236	68	135	364	78	168	528	65	19	312	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	11	11	11	10	11	11
Total Lost time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.97		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1620	1682		1662	3315		1694	3266		1452	3226	
Flt Permitted	0.33	1.00		0.29	1.00		0.30	1.00		0.35	1.00	
Satd. Flow (perm)	565	1682		502	3315		533	3266		539	3226	
Peak-hour factor, PHF	0.80	0.80	0.80	0.84	0.84	0.84	0.90	0.90	0.90	0.83	0.83	0.83
Adj. Flow (vph)	159	295	85	161	433	93	187	587	72	23	376	81
RTOR Reduction (vph)	0	7	0	0	12	0	0	7	0	0	15	0
Lane Group Flow (vph)	159	373	0	161	514	0	187	652	0	23	442	0
Heavy Vehicles (%)	4%	6%	4%	5%	3%	0%	3%	4%	14%	16%	6%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	37.7	27.2		37.5	27.1		34.8	29.3		24.0	21.5	
Effective Green, g (s)	37.7	28.2		37.5	28.1		34.8	30.3		24.0	22.5	
Actuated g/C Ratio	0.42	0.31		0.41	0.31		0.38	0.33		0.26	0.25	
Clearance Time (s)	3.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	357	523		340	1028		336	1092		167	801	
v/s Ratio Prot	0.05	c0.22		c0.05	0.15		c0.06	c0.20		0.00	0.14	
v/s Ratio Perm	0.13			0.14			0.15			0.03		
v/c Ratio	0.45	0.71		0.47	0.50		0.56	0.60		0.14	0.55	
Uniform Delay, d1	17.5	27.6		18.3	25.5		20.0	25.1		24.9	29.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	4.6		1.0	0.4		2.0	0.9		0.4	0.8	
Delay (s)	18.4	32.2		19.3	25.9		21.9	26.0		25.3	30.5	
Level of Service	B	C		B	C		C	C		C	C	
Approach Delay (s)		28.1			24.4			25.1			30.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	90.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	266	106	175	307	39	164	510	127	50	701	57
Future Volume (vph)	74	266	106	175	307	39	164	510	127	50	701	57
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.957			0.983			0.970			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1620	1740	0	1711	3389	0	1745	3293	0	1652	3441	0
Flt Permitted	0.527			0.187			0.110			0.304		
Satd. Flow (perm)	899	1740	0	337	3389	0	202	3293	0	529	3441	0
Satd. Flow (RTOR)		14			10			24			6	
Adj. Flow (vph)	80	286	114	190	334	42	169	526	131	59	825	67
Lane Group Flow (vph)	80	400	0	190	376	0	169	657	0	59	892	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	8.0	10.0		8.0	10.0		8.0	10.0		8.0	10.0	
Total Split (s)	15.0	34.0		15.0	34.0		13.0	40.0		13.0	40.0	
Total Split (%)	11.6%	26.4%		11.6%	26.4%		10.1%	31.0%		10.1%	31.0%	
Maximum Green (s)	12.0	29.0		12.0	29.0		10.0	35.0		10.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0		0.0	-1.0		0.0	-1.0	
Total Lost Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.20	0.79		0.63	0.33		0.69	0.53		0.20	0.79	
Control Delay	21.6	47.3		31.9	29.0		36.9	28.8		19.8	38.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.6	47.3		31.9	29.0		36.9	28.8		19.8	38.7	
Queue Length 50th (ft)	29	229		74	93		60	165		20	262	
Queue Length 95th (ft)	81	#518		#197	186		#218	313		56	#424	
Internal Link Dist (ft)		1137			954			810			2231	
Turn Bay Length (ft)	95			115			90			90		
Base Capacity (vph)	456	523		308	1149		244	1241		339	1223	
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	0.18	0.76		0.62	0.33		0.69	0.53		0.17	0.73	

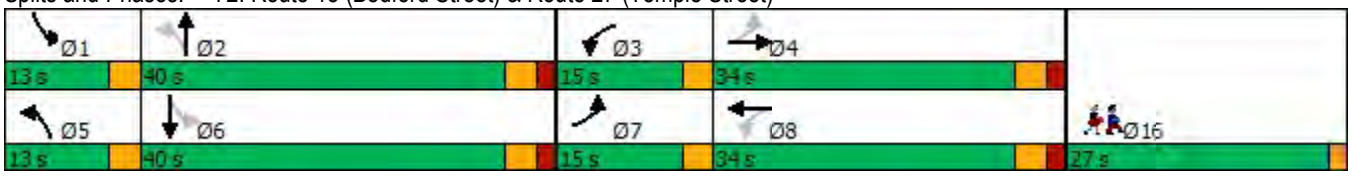
Intersection Summary
Cycle Length: 129

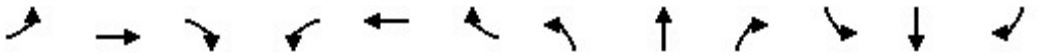
Lane Group	Ø16
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	16
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	21%
Maximum Green (s)	25.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	16.0
Pedestrian Calls (#/hr)	7
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 103.1
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 72: Route 18 (Bedford Street) & Route 27 (Temple Street)

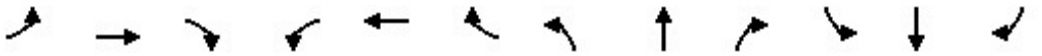




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	266	106	175	307	39	164	510	127	50	701	57
Future Volume (vph)	74	266	106	175	307	39	164	510	127	50	701	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	11	11	11	10	11	11
Total Lost time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.98		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1620	1741		1711	3390		1745	3293		1652	3440	
Flt Permitted	0.53	1.00		0.19	1.00		0.11	1.00		0.30	1.00	
Satd. Flow (perm)	898	1741		337	3390		203	3293		528	3440	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.97	0.97	0.97	0.85	0.85	0.85
Adj. Flow (vph)	80	286	114	190	334	42	169	526	131	59	825	67
RTOR Reduction (vph)	0	10	0	0	7	0	0	15	0	0	4	0
Lane Group Flow (vph)	80	390	0	190	369	0	169	642	0	59	888	0
Heavy Vehicles (%)	4%	1%	1%	2%	1%	3%	0%	3%	2%	2%	0%	4%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	36.2	29.1		43.9	33.8		46.4	37.2		39.4	33.2	
Effective Green, g (s)	36.2	30.1		43.9	34.8		46.4	38.2		39.4	34.2	
Actuated g/C Ratio	0.34	0.28		0.41	0.33		0.44	0.36		0.37	0.32	
Clearance Time (s)	3.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	355	494		292	1112		237	1186		262	1109	
v/s Ratio Prot	0.02	c0.22		c0.07	0.11		c0.07	0.19		0.01	c0.26	
v/s Ratio Perm	0.06			0.20			0.24			0.07		
v/c Ratio	0.23	0.79		0.65	0.33		0.71	0.54		0.23	0.80	
Uniform Delay, d1	24.2	35.0		23.0	26.8		22.4	26.9		22.0	32.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	8.2		5.1	0.2		9.7	0.5		0.4	4.2	
Delay (s)	24.5	43.2		28.1	27.0		32.1	27.4		22.5	37.0	
Level of Service	C	D		C	C		C	C		C	D	
Approach Delay (s)		40.1			27.4			28.4			36.1	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	106.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	225	104	169	223	81	104	494	126	49	474	53
Future Volume (vph)	77	225	104	169	223	81	104	494	126	49	474	53
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.953			0.960			0.970			0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	1739	0	1728	3324	0	1728	3358	0	1652	3407	0
Flt Permitted	0.554			0.252			0.197			0.264		
Satd. Flow (perm)	982	1739	0	458	3324	0	358	3358	0	459	3407	0
Satd. Flow (RTOR)		17			37			24			9	
Adj. Flow (vph)	84	245	113	182	240	87	113	537	137	59	571	64
Lane Group Flow (vph)	84	358	0	182	327	0	113	674	0	59	635	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	8.0	10.0		8.0	10.0		8.0	10.0		8.0	10.0	
Total Split (s)	15.0	34.0		15.0	34.0		13.0	40.0		13.0	40.0	
Total Split (%)	11.6%	26.4%		11.6%	26.4%		10.1%	31.0%		10.1%	31.0%	
Maximum Green (s)	12.0	29.0		12.0	29.0		10.0	35.0		10.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0		0.0	-1.0		0.0	-1.0	
Total Lost Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.18	0.71		0.50	0.28		0.38	0.62		0.21	0.67	
Control Delay	18.8	38.2		23.5	23.4		22.3	30.0		20.3	33.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.8	38.2		23.5	23.4		22.3	30.0		20.3	33.5	
Queue Length 50th (ft)	23	155		52	56		34	154		17	152	
Queue Length 95th (ft)	84	#434		167	152		102	321		55	274	
Internal Link Dist (ft)		1137			954			810			2231	
Turn Bay Length (ft)	95			115			90			90		
Base Capacity (vph)	533	643		392	1253		317	1480		331	1493	
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	0.16	0.56		0.46	0.26		0.36	0.46		0.18	0.43	

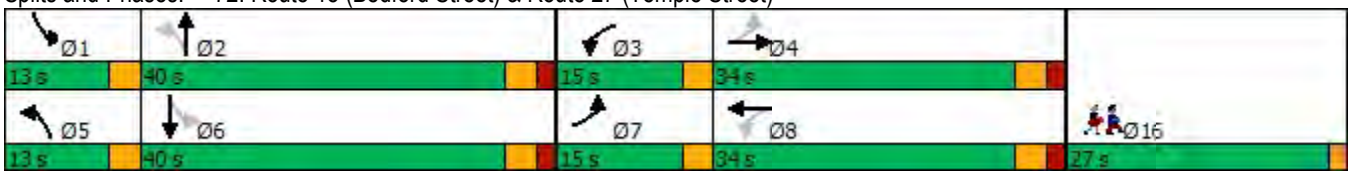
Intersection Summary
Cycle Length: 129

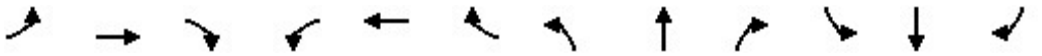
Lane Group	Ø16
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	16
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	21%
Maximum Green (s)	25.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	16.0
Pedestrian Calls (#/hr)	4
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 87.5
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 72: Route 18 (Bedford Street) & Route 27 (Temple Street)



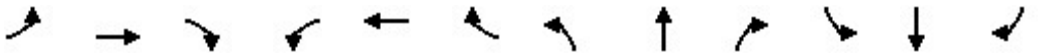


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	225	104	169	223	81	104	494	126	49	474	53
Future Volume (vph)	77	225	104	169	223	81	104	494	126	49	474	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	11	11	11	10	11	11
Total Lost time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.96		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1685	1739		1728	3324		1728	3357		1652	3406	
Flt Permitted	0.55	1.00		0.25	1.00		0.20	1.00		0.26	1.00	
Satd. Flow (perm)	983	1739		458	3324		359	3357		459	3406	
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	84	245	113	182	240	87	113	537	137	59	571	64
RTOR Reduction (vph)	0	12	0	0	25	0	0	17	0	0	7	0
Lane Group Flow (vph)	84	346	0	182	302	0	113	657	0	59	628	0
Heavy Vehicles (%)	0%	0%	2%	1%	0%	3%	1%	1%	0%	2%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	31.6	24.7		38.7	28.8		36.0	27.0		29.7	23.7	
Effective Green, g (s)	31.6	25.7		38.7	29.8		36.0	28.0		29.7	24.7	
Actuated g/C Ratio	0.35	0.29		0.43	0.33		0.40	0.31		0.33	0.27	
Clearance Time (s)	3.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	399	497		352	1101		285	1045		231	935	
v/s Ratio Prot	0.02	c0.20		c0.06	0.09		c0.04	c0.20		0.02	0.18	
v/s Ratio Perm	0.06			0.16			0.12			0.07		
v/c Ratio	0.21	0.70		0.52	0.27		0.40	0.63		0.26	0.67	
Uniform Delay, d1	19.9	28.6		17.8	22.1		18.5	26.5		21.3	29.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	4.2		1.3	0.1		0.9	1.2		0.6	1.9	
Delay (s)	20.2	32.8		19.1	22.2		19.5	27.7		21.9	30.9	
Level of Service	C	C		B	C		B	C		C	C	
Approach Delay (s)		30.4			21.1			26.5			30.1	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Route 18 at Auburn Street (Route 14)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	32	26	123	13	144	2	554	68	49	415	9
Future Volume (vph)	42	32	26	123	13	144	2	554	68	49	415	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.862			0.984			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1745	1783	1501	1711	1543	0	1685	3337	0	1531	3317	0
Flt Permitted	0.647			0.493			0.491			0.292		
Satd. Flow (perm)	1188	1783	1501	888	1543	0	871	3337	0	470	3317	0
Satd. Flow (RTOR)			96		160			12			2	
Adj. Flow (vph)	52	40	32	137	14	160	2	637	78	52	441	10
Lane Group Flow (vph)	52	40	32	137	174	0	2	715	0	52	451	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	8.0	10.0	10.0	8.0	10.0		8.0	10.0		8.0	10.0	
Total Split (s)	13.0	18.0	18.0	13.0	18.0		15.0	41.0		15.0	41.0	
Total Split (%)	11.4%	15.8%	15.8%	11.4%	15.8%		13.2%	36.0%		13.2%	36.0%	
Maximum Green (s)	10.0	13.0	13.0	10.0	13.0		12.0	36.0		12.0	36.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		0.0	-1.0		0.0	-1.0	
Total Lost Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	None		None	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.17	0.17	0.12	0.43	0.49		0.00	0.41		0.13	0.23	
Control Delay	24.4	35.3	0.8	28.1	13.3		12.5	16.8		11.3	11.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	24.4	35.3	0.8	28.1	13.3		12.5	16.8		11.3	11.9	
Queue Length 50th (ft)	14	15	0	39	5		0	103		8	42	
Queue Length 95th (ft)	55	53	0	137	75		5	277		44	167	
Internal Link Dist (ft)		843			721			1359			2852	
Turn Bay Length (ft)	115		80	180			150			85		
Base Capacity (vph)	370	388	401	352	461		685	1926		487	1934	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.14	0.10	0.08	0.39	0.38		0.00	0.37		0.11	0.23	

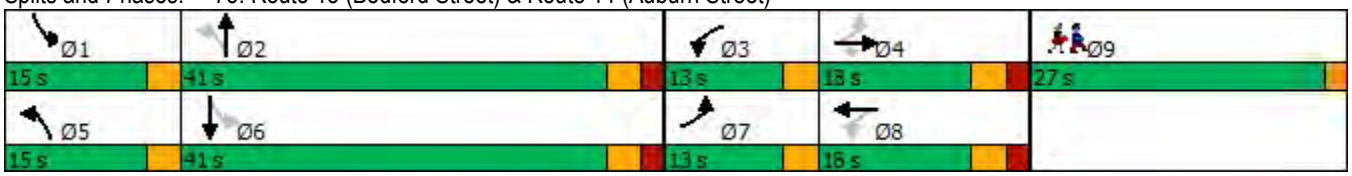
Intersection Summary
Cycle Length: 114

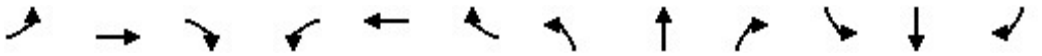
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	24%
Maximum Green (s)	25.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	1
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 69.5
Natural Cycle: 70
Control Type: Actuated-Uncoordinated

Splits and Phases: 73: Route 18 (Bedford Street) & Route 14 (Auburn Street)

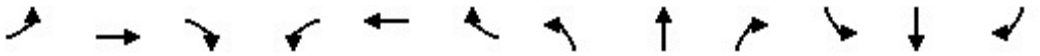




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	32	26	123	13	144	2	554	68	49	415	9
Future Volume (vph)	42	32	26	123	13	144	2	554	68	49	415	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	12	10	11	11	11	11	11
Total Lost time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0		3.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.86		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	1783	1501	1711	1543		1685	3336		1531	3316	
Flt Permitted	0.65	1.00	1.00	0.49	1.00		0.49	1.00		0.29	1.00	
Satd. Flow (perm)	1189	1783	1501	887	1543		872	3336		470	3316	
Peak-hour factor, PHF	0.81	0.81	0.81	0.90	0.90	0.90	0.87	0.87	0.87	0.94	0.94	0.94
Adj. Flow (vph)	52	40	32	137	14	160	2	637	78	52	441	10
RTOR Reduction (vph)	0	0	29	0	138	0	0	6	0	0	1	0
Lane Group Flow (vph)	52	40	3	137	36	0	2	709	0	52	450	0
Heavy Vehicles (%)	0%	3%	4%	2%	8%	6%	0%	3%	2%	14%	5%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	10.5	6.2	6.2	16.7	9.4		36.7	36.0		43.1	39.4	
Effective Green, g (s)	10.5	7.2	7.2	16.7	10.4		36.7	37.0		43.1	40.4	
Actuated g/C Ratio	0.14	0.10	0.10	0.22	0.14		0.49	0.49		0.58	0.54	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	198	171	144	280	214		434	1647		328	1788	
v/s Ratio Prot	0.02	0.02		c0.05	0.02		0.00	c0.21		c0.01	0.14	
v/s Ratio Perm	0.02		0.00	c0.06			0.00			0.08		
v/c Ratio	0.26	0.23	0.02	0.49	0.17		0.00	0.43		0.16	0.25	
Uniform Delay, d1	28.5	31.3	30.7	24.6	28.4		9.8	12.2		7.6	9.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.7	0.1	1.3	0.4		0.0	0.2		0.2	0.3	
Delay (s)	29.2	32.0	30.7	26.0	28.8		9.8	12.4		7.8	9.5	
Level of Service	C	C	C	C	C		A	B		A	A	
Approach Delay (s)		30.5			27.6			12.4			9.4	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	74.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	113	61	114	96	137	83	544	107	120	656	60
Future Volume (vph)	71	113	61	114	96	137	83	544	107	120	656	60
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.912			0.975			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1728	1818	1516	1745	1733	0	1685	3346	0	1745	3407	0
Flt Permitted	0.382			0.487			0.297			0.307		
Satd. Flow (perm)	695	1818	1516	894	1733	0	527	3346	0	564	3407	0
Satd. Flow (RTOR)			96		52			21			9	
Adj. Flow (vph)	88	140	75	124	104	149	86	561	110	126	691	63
Lane Group Flow (vph)	88	140	75	124	253	0	86	671	0	126	754	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	8.0	10.0	10.0	8.0	10.0		8.0	10.0		8.0	10.0	
Total Split (s)	13.0	18.0	18.0	13.0	18.0		15.0	41.0		15.0	41.0	
Total Split (%)	11.4%	15.8%	15.8%	11.4%	15.8%		13.2%	36.0%		13.2%	36.0%	
Maximum Green (s)	10.0	13.0	13.0	10.0	13.0		12.0	36.0		12.0	36.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		0.0	-1.0		0.0	-1.0	
Total Lost Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	None		None	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.30	0.49	0.24	0.34	0.67		0.21	0.44		0.28	0.46	
Control Delay	22.8	38.1	6.7	23.2	36.0		8.4	16.1		9.0	16.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	22.8	38.1	6.7	23.2	36.0		8.4	16.1		9.0	16.2	
Queue Length 50th (ft)	32	66	0	46	98		17	114		25	135	
Queue Length 95th (ft)	59	111	19	89	#220		36	171		49	198	
Internal Link Dist (ft)		843			721			1359			2852	
Turn Bay Length (ft)	115		80	180			150			85		
Base Capacity (vph)	339	327	351	380	377		494	1605		520	1626	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.26	0.43	0.21	0.33	0.67		0.17	0.42		0.24	0.46	

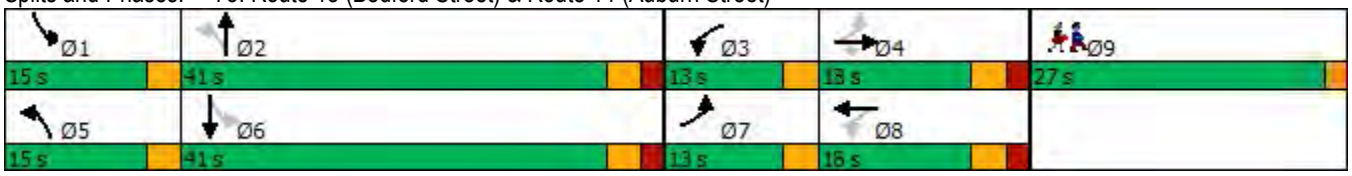
Intersection Summary
Cycle Length: 114

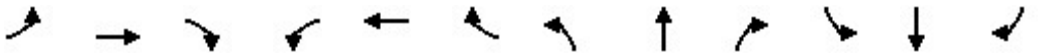
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	24%
Maximum Green (s)	25.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	0
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 78.7
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 73: Route 18 (Bedford Street) & Route 14 (Auburn Street)

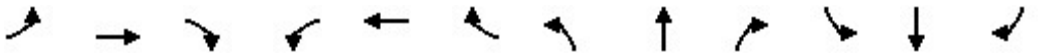




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	113	61	114	96	137	83	544	107	120	656	60
Future Volume (vph)	71	113	61	114	96	137	83	544	107	120	656	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	12	10	11	11	11	11	11
Total Lost time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0		3.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1728	1818	1516	1745	1732		1685	3348		1745	3409	
Flt Permitted	0.38	1.00	1.00	0.49	1.00		0.30	1.00		0.31	1.00	
Satd. Flow (perm)	695	1818	1516	894	1732		527	3348		564	3409	
Peak-hour factor, PHF	0.81	0.81	0.81	0.92	0.92	0.92	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	88	140	75	124	104	149	86	561	110	126	691	63
RTOR Reduction (vph)	0	0	63	0	42	0	0	12	0	0	5	0
Lane Group Flow (vph)	88	140	12	124	211	0	86	659	0	126	749	0
Heavy Vehicles (%)	1%	1%	3%	0%	0%	0%	0%	2%	0%	0%	1%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	18.7	12.0	12.0	23.1	14.2		41.5	34.9		44.5	36.4	
Effective Green, g (s)	18.7	13.0	13.0	23.1	15.2		41.5	35.9		44.5	37.4	
Actuated g/C Ratio	0.23	0.16	0.16	0.29	0.19		0.52	0.45		0.56	0.47	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	249	295	246	353	329		369	1504		433	1595	
v/s Ratio Prot	0.03	0.08		c0.04	c0.12		0.02	0.20		c0.03	c0.22	
v/s Ratio Perm	0.05		0.01	0.06			0.10			0.13		
v/c Ratio	0.35	0.47	0.05	0.35	0.64		0.23	0.44		0.29	0.47	
Uniform Delay, d1	24.8	30.4	28.2	21.8	29.8		10.0	15.1		9.0	14.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	1.2	0.1	0.6	4.2		0.3	0.2		0.4	1.0	
Delay (s)	25.7	31.6	28.3	22.4	34.1		10.4	15.3		9.3	15.5	
Level of Service	C	C	C	C	C		B	B		A	B	
Approach Delay (s)		29.1			30.2			14.7			14.6	
Approach LOS		C			C			B			B	

Intersection Summary					
HCM 2000 Control Delay	19.1	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.51				
Actuated Cycle Length (s)	79.9	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	56.0%	ICU Level of Service		B	
Analysis Period (min)	15				

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	150	75	84	135	118	59	493	75	107	530	82
Future Volume (vph)	81	150	75	84	135	118	59	493	75	107	530	82
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.930			0.980			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1745	1783	1561	1711	1740	0	1685	3386	0	1745	3386	0
Flt Permitted	0.294			0.526			0.333			0.348		
Satd. Flow (perm)	540	1783	1561	947	1740	0	591	3386	0	639	3386	0
Satd. Flow (RTOR)			96		31			16			16	
Adj. Flow (vph)	84	156	78	88	142	124	63	524	80	114	564	87
Lane Group Flow (vph)	84	156	78	88	266	0	63	604	0	114	651	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	8.0	10.0	10.0	8.0	10.0		8.0	10.0		8.0	10.0	
Total Split (s)	13.0	18.0	18.0	13.0	18.0		15.0	41.0		15.0	41.0	
Total Split (%)	11.4%	15.8%	15.8%	11.4%	15.8%		13.2%	36.0%		13.2%	36.0%	
Maximum Green (s)	10.0	13.0	13.0	10.0	13.0		12.0	36.0		12.0	36.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		0.0	-1.0		0.0	-1.0	
Total Lost Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	None		None	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.32	0.50	0.22	0.27	0.80		0.15	0.39		0.25	0.41	
Control Delay	28.3	42.2	7.9	27.2	51.5		12.0	18.9		12.4	18.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.3	42.2	7.9	27.2	51.5		12.0	18.9		12.4	18.8	
Queue Length 50th (ft)	30	72	0	31	116		12	99		22	108	
Queue Length 95th (ft)	91	#202	32	95	#365		51	244		83	260	
Internal Link Dist (ft)		843			721			1359			2852	
Turn Bay Length (ft)	115		80	180			150			85		
Base Capacity (vph)	303	314	354	362	333		505	1586		536	1586	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.28	0.50	0.22	0.24	0.80		0.12	0.38		0.21	0.41	

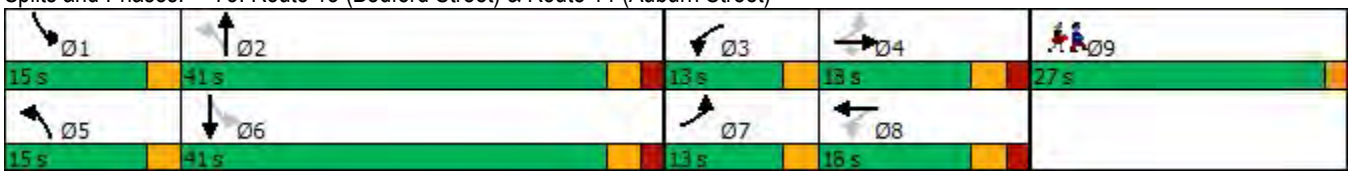
Intersection Summary
Cycle Length: 114

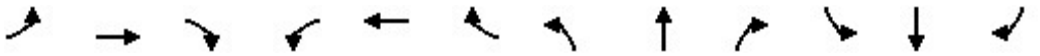
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	27.0
Total Split (s)	27.0
Total Split (%)	24%
Maximum Green (s)	25.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	18.0
Pedestrian Calls (#/hr)	1
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Actuated Cycle Length: 82.8
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 73: Route 18 (Bedford Street) & Route 14 (Auburn Street)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	150	75	84	135	118	59	493	75	107	530	82
Future Volume (vph)	81	150	75	84	135	118	59	493	75	107	530	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	12	10	11	11	11	11	11
Total Lost time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0		3.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	1783	1561	1711	1740		1685	3386		1745	3386	
Flt Permitted	0.29	1.00	1.00	0.53	1.00		0.33	1.00		0.35	1.00	
Satd. Flow (perm)	540	1783	1561	946	1740		591	3386		639	3386	
Peak-hour factor, PHF	0.96	0.96	0.96	0.95	0.95	0.95	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	84	156	78	88	142	124	63	524	80	114	564	87
RTOR Reduction (vph)	0	0	65	0	26	0	0	9	0	0	9	0
Lane Group Flow (vph)	84	156	13	88	240	0	63	595	0	114	642	0
Heavy Vehicles (%)	0%	3%	0%	2%	2%	1%	0%	1%	1%	0%	1%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	20.2	13.6	13.6	20.2	13.6		43.2	37.1		44.2	37.6	
Effective Green, g (s)	20.2	14.6	14.6	20.2	14.6		43.2	38.1		44.2	38.6	
Actuated g/C Ratio	0.24	0.17	0.17	0.24	0.17		0.50	0.45		0.52	0.45	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	220	304	266	282	296		376	1507		415	1526	
v/s Ratio Prot	c0.03	0.09		0.02	c0.14		0.01	0.18		c0.02	c0.19	
v/s Ratio Perm	0.06		0.01	0.05			0.07			0.12		
v/c Ratio	0.38	0.51	0.05	0.31	0.81		0.17	0.39		0.27	0.42	
Uniform Delay, d1	26.7	32.3	29.7	26.4	34.2		11.2	16.0		11.0	15.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	1.5	0.1	0.6	15.4		0.2	0.2		0.4	0.9	
Delay (s)	27.8	33.7	29.8	27.0	49.6		11.4	16.2		11.4	16.8	
Level of Service	C	C	C	C	D		B	B		B	B	
Approach Delay (s)		31.2			44.0			15.7			16.0	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	85.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group