

Appendix 1

Intersection Traffic Counts



125 S. 84th Street, Suite 401
 Milwaukee, WI 53214-1470
 (414) 259-1500

E. Washington Avenue & N. Webster Street
 Weekday PM Peak Period
 Madison, WI
 2014-0070

File Name : Washington & Webster
 Site Code : 00000000
 Start Date : 2/18/2013
 Page No : 1

Groups Printed- Passenger Vehicle - Bus - Truck

Start Time	N. Webster Street From North					E. Washington Avenue From East					N. Webster Street From South					E. Washington Avenue From West					Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total			
03:00 PM	0	0	0	17	0	0	30	80	8	110	3	36	142	15	181	0	27	0	3	27	43	318	361
03:15 PM	0	0	0	12	0	0	23	85	9	108	2	31	107	10	140	1	28	0	10	29	41	277	318
03:30 PM	0	0	0	11	0	0	23	87	10	110	1	42	153	7	196	1	29	0	11	30	39	336	375
03:45 PM	0	0	0	18	0	0	29	105	8	134	1	48	154	13	203	3	43	0	16	46	55	383	438
Total	0	0	0	58	0	0	105	357	35	462	7	157	556	45	720	5	127	0	40	132	178	1314	1492
04:00 PM	0	0	0	15	0	0	32	100	12	132	3	57	168	12	228	1	43	0	19	44	58	404	462
04:15 PM	0	0	0	11	0	0	36	97	16	133	4	63	181	11	248	1	43	0	24	44	62	425	487
04:30 PM	0	0	0	11	0	0	31	116	17	147	10	89	285	21	384	0	46	0	12	46	61	577	638
04:45 PM	0	0	0	18	0	0	46	103	19	149	6	75	222	10	303	0	47	0	16	47	63	499	562
Total	0	0	0	55	0	0	145	416	64	561	23	284	856	54	1163	2	179	0	71	181	244	1905	2149
05:00 PM	0	0	0	21	0	0	45	111	19	156	3	114	236	11	353	2	53	0	12	55	63	564	627
05:15 PM	0	0	0	10	0	0	29	92	8	121	3	82	170	12	255	3	36	0	13	39	43	415	458
05:30 PM	0	0	0	23	0	0	34	134	5	168	5	55	159	5	219	2	44	0	8	46	41	433	474
05:45 PM	0	0	0	12	0	0	30	118	3	148	4	59	108	10	171	2	30	0	5	32	30	351	381
Total	0	0	0	66	0	0	138	455	35	593	15	310	673	38	998	9	163	0	38	172	177	1763	1940
Grand Total	0	0	0	179	0	0	388	1228	134	1616	45	751	2085	137	2881	16	469	0	149	485	599	4982	5581
Apprch %	0	0	0			0	24	76			1.6	26.1	72.4			3.3	96.7	0					
Total %	0	0	0		0	0	7.8	24.6		32.4	0.9	15.1	41.9		57.8	0.3	9.4	0		9.7	10.7	89.3	
Passenger Vehicle	0	0	0		179	0	336	1208		1678	45	745	2067		2994	15	424	0		588	0	0	5439
% Passenger Vehicle	0	0	0	100	100	0	86.6	98.4	100	95.9	100	99.2	99.1	100	99.2	93.8	90.4	0	100	92.7	0	0	97.5
Bus	0	0	0		0	0	44	12		56	0	3	7		10	0	39	0		39	0	0	105
% Bus	0	0	0		0	0	11.3	1		3.2	0	0.4	0.3		0.3	0	8.3	0		6.2	0	0	1.9
Truck	0	0	0		0	0	8	8		16	0	3	11		14	1	6	0		7	0	0	37
% Truck	0	0	0		0	0	2.1	0.7		0.9	0	0.4	0.5		0.5	6.2	1.3	0		1.1	0	0	0.7



125 S. 84th Street, Suite 401
 Milwaukee, WI 53214-1470
 (414) 259-1500

E. Washington Avenue & N. Webster Street
 Weekday PM Peak Period
 Madison, WI
 2014-0070

File Name : Washington & Webster
 Site Code : 00000000
 Start Date : 2/18/2013
 Page No : 1

Groups Printed- Bus - Truck

Start Time	N. Webster Street From North					E. Washington Avenue From East					N. Webster Street From South					E. Washington Avenue From West					Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total			
03:00 PM	0	0	0	0	0	0	6	1	0	7	0	2	4	0	6	0	3	0	0	3	0	16	16
03:15 PM	0	0	0	0	0	0	2	2	0	4	0	2	1	0	3	0	4	0	0	4	0	11	11
03:30 PM	0	0	0	0	0	0	5	3	0	8	0	0	2	0	2	0	4	0	0	4	0	14	14
03:45 PM	0	0	0	0	0	0	7	2	0	9	0	0	3	0	3	1	5	0	0	6	0	18	18
Total	0	0	0	0	0	0	20	8	0	28	0	4	10	0	14	1	16	0	0	17	0	59	59
04:00 PM	0	0	0	0	0	0	5	2	0	7	0	0	1	0	1	0	5	0	0	5	0	13	13
04:15 PM	0	0	0	0	0	0	7	3	0	10	0	0	0	0	0	0	6	0	0	6	0	16	16
04:30 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	0	6	6
04:45 PM	0	0	0	0	0	0	6	1	0	7	0	0	1	0	1	0	4	0	0	4	0	12	12
Total	0	0	0	0	0	0	21	6	0	27	0	0	2	0	2	0	18	0	0	18	0	47	47
05:00 PM	0	0	0	0	0	0	4	4	0	8	0	0	0	0	0	0	2	0	0	2	0	10	10
05:15 PM	0	0	0	0	0	0	2	1	0	3	0	0	2	0	2	0	4	0	0	4	0	9	9
05:30 PM	0	0	0	0	0	0	3	1	0	4	0	1	3	0	4	0	2	0	0	2	0	10	10
05:45 PM	0	0	0	0	0	0	2	0	0	2	0	1	1	0	2	0	3	0	0	3	0	7	7
Total	0	0	0	0	0	0	11	6	0	17	0	2	6	0	8	0	11	0	0	11	0	36	36
Grand Total	0	0	0	0	0	0	52	20	0	72	0	6	18	0	24	1	45	0	0	46	0	142	142
Apprch %	0	0	0			0	72.2	27.8			0	25	75			2.2	97.8	0			0		
Total %	0	0	0			0	36.6	14.1		50.7	0	4.2	12.7		16.9	0.7	31.7	0		32.4	0	100	
Bus	0	0	0			0	44	12		56	0	3	7		10	0	39	0		39	0	0	105
% Bus	0	0	0	0	0	0	84.6	60	0	77.8	0	50	38.9	0	41.7	0	86.7	0	0	84.8	0	0	73.9
Truck	0	0	0			0	8	8		16	0	3	11		14	1	6	0		7	0	0	37
% Truck	0	0	0	0	0	0	15.4	40	0	22.2	0	50	61.1	0	58.3	100	13.3	0	0	15.2	0	0	26.1



125 S. 84th Street, Suite 401
 Milwaukee, WI 53214-1470
 (414) 259-1500

N. Webster Street & E. Mifflin Street
 Weekday PM Peak Period
 Madison, WI
 2014-0070

File Name : Webster & Mifflin
 Site Code : 00000000
 Start Date : 2/18/2014
 Page No : 1

Groups Printed- Passenger Vehicle - Bus - Truck

Start Time	N. Webster Street From North					E. Mifflin Street From East					N. Webster Street From South					E. Mifflin Street From West					Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total			
03:00 PM	0	0	0	12	0	0	0	15	12	15	0	116	8	6	124	7	10	0	5	17	35	156	191
03:15 PM	0	0	0	13	0	0	0	19	15	19	0	104	4	10	108	3	12	0	7	15	45	142	187
03:30 PM	0	0	0	14	0	0	0	15	17	15	0	108	10	10	118	3	6	0	2	9	43	142	185
03:45 PM	0	0	0	13	0	0	0	14	16	14	0	148	11	17	159	1	16	0	7	17	53	190	243
Total	0	0	0	52	0	0	0	63	60	63	0	476	33	43	509	14	44	0	21	58	176	630	806
04:00 PM	0	0	0	25	0	0	0	20	19	20	0	120	7	15	127	4	16	0	10	20	69	167	236
04:15 PM	0	0	0	20	0	0	0	19	20	19	0	137	5	10	142	7	9	0	9	16	59	177	236
04:30 PM	0	0	0	22	0	0	0	23	30	23	0	168	12	26	180	1	16	0	8	17	86	220	306
04:45 PM	0	0	0	15	0	0	0	20	26	20	0	154	6	22	160	5	19	0	6	24	69	204	273
Total	0	0	0	82	0	0	0	82	95	82	0	579	30	73	609	17	60	0	33	77	283	768	1051
05:00 PM	0	0	0	32	0	0	0	20	20	20	0	203	6	24	209	6	23	0	10	29	86	258	344
05:15 PM	0	0	0	26	0	0	0	35	24	35	0	183	11	33	194	7	12	0	10	19	93	248	341
05:30 PM	0	0	0	14	0	0	0	16	15	16	0	165	6	27	171	4	17	0	11	21	67	208	275
05:45 PM	0	0	0	15	0	0	0	22	14	22	0	163	6	20	169	9	20	0	6	29	55	220	275
Total	0	0	0	87	0	0	0	93	73	93	0	714	29	104	743	26	72	0	37	98	301	934	1235
Grand Total	0	0	0	221	0	0	0	238	228	238	0	1769	92	220	1861	57	176	0	91	233	760	2332	3092
Apprch %	0	0	0			0	0	100			0	95.1	4.9			24.5	75.5	0					
Total %	0	0	0		0	0	0	10.2		10.2	0	75.9	3.9		79.8	2.4	7.5	0		10	24.6	75.4	
Passenger Vehicle	0	0	0		221	0	0	235		463	0	1750	92		2062	54	173	0		318	0	0	3064
% Passenger Vehicle	0	0	0	100	100	0	0	98.7	100	99.4	0	98.9	100	100	99.1	94.7	98.3	0	100	98.1	0	0	99.1
Bus	0	0	0		0	0	0	2		2	0	11	0		11	1	2	0		3	0	0	16
% Bus	0	0	0	0	0	0	0	0.8	0	0.4	0	0.6	0	0	0.5	1.8	1.1	0	0	0.9	0	0	0.5
Truck	0	0	0		0	0	0	1		1	0	8	0		8	2	1	0		3	0	0	12
% Truck	0	0	0	0	0	0	0	0.4	0	0.2	0	0.5	0	0	0.4	3.5	0.6	0	0	0.9	0	0	0.4



125 S. 84th Street, Suite 401
 Milwaukee, WI 53214-1470
 (414) 259-1500

N. Webster Street & E. Mifflin Street
 Weekday PM Peak Period
 Madison, WI
 2014-0070

File Name : Webster & Mifflin
 Site Code : 00000000
 Start Date : 2/18/2014
 Page No : 1

Groups Printed- Bus - Truck

Start Time	N. Webster Street From North					E. Mifflin Street From East					N. Webster Street From South					E. Mifflin Street From West					Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total			
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	0	2	0	3	3
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	1	1	0	0	2	0	4	4
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	0	3	3
Total	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	3	2	0	0	5	0	11	11
04:00 PM	0	0	0	0	0	0	0	1	0	1	0	3	0	0	3	0	0	0	0	0	0	4	4
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	2
04:45 PM	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0	2	2
Total	0	0	0	0	0	0	0	2	0	2	0	7	0	0	7	0	0	0	0	0	0	9	9
05:00 PM	0	0	0	0	0	0	0	1	0	1	0	2	0	0	2	0	1	0	0	1	0	4	4
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	2
Total	0	0	0	0	0	0	0	1	0	1	0	6	0	0	6	0	1	0	0	1	0	8	8
Grand Total	0	0	0	0	0	0	0	3	0	3	0	19	0	0	19	3	3	0	0	6	0	28	28
Apprch %	0	0	0			0	0	100			0	100	0			50	50	0					
Total %	0	0	0		0	0	0	10.7		10.7	0	67.9	0		67.9	10.7	10.7	0		21.4	0	100	
Bus	0	0	0		0	0	0	2		2	0	11	0		11	1	2	0		3	0	0	16
% Bus	0	0	0		0	0	0	66.7		66.7	0	57.9	0		57.9	33.3	66.7	0		50	0	0	57.1
Truck	0	0	0		0	0	0	1		1	0	8	0		8	2	1	0		3	0	0	12
% Truck	0	0	0		0	0	0	33.3		33.3	0	42.1	0		42.1	66.7	33.3	0		50	0	0	42.9



















Appendix 2

Existing (Year 2014) Traffic Analysis

Existing (Year 2014) PM Peak Hour Traffic Analysis With Existing Timings & Geometrics

3: N. Webster Street & E. Washington Avenue

HCM Signalized Intersection Capacity Analysis

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	25	360	915	5	185	0	0	155	425
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0	5.0		3.5			3.5	3.5
Lane Util. Factor					0.91	0.91		1.00			1.00	0.88
Frt					0.92	0.85		1.00			1.00	0.85
Flt Protected					1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)					2623	1297		1396			1644	2460
Flt Permitted					1.00	1.00		0.99			1.00	1.00
Satd. Flow (perm)					2623	1297		1389			1644	2460
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	28	404	1028	6	208	0	0	174	478
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	946	514	0	214	0	0	174	478
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	4%	4%	4%
Parking (#/hr)				5	5		5	5				
Turn Type				Split	NA	Perm	Perm	NA			NA	Perm
Protected Phases		4		2	2			3			3	
Permitted Phases						2	3					3
Actuated Green, G (s)					33.0	33.0		22.0			22.0	22.0
Effective Green, g (s)					33.0	33.0		22.0			22.0	22.0
Actuated g/C Ratio					0.41	0.41		0.28			0.28	0.28
Clearance Time (s)					5.0	5.0		3.5			3.5	3.5
Lane Grp Cap (vph)					1081	535		381			452	676
v/s Ratio Prot					0.36						0.11	
v/s Ratio Perm						c0.40		0.15				c0.19
v/c Ratio					1.05dr	0.96		0.56			0.38	0.71
Uniform Delay, d1					21.6	22.9		24.9			23.5	26.1
Progression Factor					1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2					9.9	30.3		5.9			2.5	6.1
Delay (s)					31.5	53.2		30.7			26.0	32.2
Level of Service					C	D		C			C	C
Approach Delay (s)		0.0			39.1			30.7			30.6	
Approach LOS		A			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			36.0		HCM 2000 Level of Service						D	
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			80.0		Sum of lost time (s)						10.5	
Intersection Capacity Utilization			61.2%		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												

Existing (Year 2014) PM Peak Hour Traffic Analysis With Existing Timings & Geometrics
 3: N. Webster Street & E. Washington Avenue

Timings

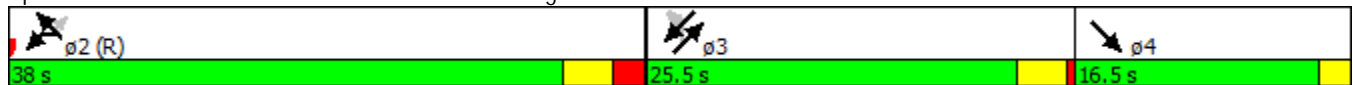


Lane Group	NWT	NWR	NEL	NET	SWT	SWR	ø4
Lane Configurations							
Volume (vph)	360	915	5	185	155	425	
Turn Type	NA	Perm	Perm	NA	NA	Perm	
Protected Phases	2			3	3		4
Permitted Phases		2	3			3	
Detector Phase	2	2	3	3	3	3	
Switch Phase							
Minimum Initial (s)	12.0	12.0	12.0	12.0	12.0	12.0	4.0
Minimum Split (s)	17.0	17.0	15.5	15.5	15.5	15.5	16.5
Total Split (s)	38.0	38.0	25.5	25.5	25.5	25.5	16.5
Total Split (%)	47.5%	47.5%	31.9%	31.9%	31.9%	31.9%	21%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	2.0	2.0	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0		3.5	3.5	3.5	
Lead/Lag			Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?			Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	33.0	33.0		22.0	22.0	22.0	
Actuated g/C Ratio	0.41	0.41		0.28	0.28	0.28	
v/c Ratio	1.05dr	0.96		0.56	0.38	0.71	
Control Delay	32.7	55.9		31.6	26.6	32.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	
Total Delay	32.7	55.9		31.6	26.6	32.8	
LOS	C	E		C	C	C	
Approach Delay	40.8			31.6	31.1		
Approach LOS	D			C	C		

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 35.2 (44%), Referenced to phase 2:NWTL, Start of Green
 Natural Cycle: 80
 Control Type: Pretimed
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 37.3
 Intersection LOS: D
 Intersection Capacity Utilization 61.2%
 ICU Level of Service B
 Analysis Period (min) 15
 dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 3: N. Webster Street & E. Washington Avenue



Existing (Year 2014) PM Peak Hour Traffic Analysis With Existing Timings & Geometrics
 3: N. Webster Street & E. Washington Avenue

Queues



Lane Group	NWT	NWR	NET	SWT	SWR
Lane Group Flow (vph)	946	514	214	174	478
v/c Ratio	1.05dr	0.96	0.56	0.38	0.71
Control Delay	32.7	55.9	31.6	26.6	32.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.7	55.9	31.6	26.6	32.8
Queue Length 50th (ft)	231	267	91	70	121
Queue Length 95th (ft)	#350	#479	159	125	177
Internal Link Dist (ft)	372		229	229	
Turn Bay Length (ft)					
Base Capacity (vph)	1081	535	381	452	676
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	0.88	0.96	0.56	0.38	0.71

Intersection Summary

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.

Existing (Year 2014) PM Peak Hour Traffic Analysis With Existing Timings & Geometrics

6: N. Webster Street & E. Mifflin Street

HCM Signalized Intersection Capacity Analysis

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations					 			 				 
Volume (vph)	0	0	0	0	745	35	20	70	0	0	0	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					8.5			6.0				6.0
Lane Util. Factor					0.95			1.00				1.00
Frt					0.99			1.00				0.86
Flt Protected					1.00			0.99				1.00
Satd. Flow (prot)					2966			1451				1269
Flt Permitted					1.00			0.99				1.00
Satd. Flow (perm)					2966			1451				1269
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	0	828	39	22	78	0	0	0	111
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	867	0	0	100	0	0	0	111
Parking (#/hr)					5	5	5	5				5
Turn Type					NA		Perm	NA				Perm
Protected Phases					2			4				
Permitted Phases							4					4
Actuated Green, G (s)					50.5			15.0				15.0
Effective Green, g (s)					50.5			15.0				15.0
Actuated g/C Ratio					0.63			0.19				0.19
Clearance Time (s)					8.5			6.0				6.0
Lane Grp Cap (vph)					1872			272				237
v/s Ratio Prot					c0.29							
v/s Ratio Perm								0.07				c0.09
v/c Ratio					0.46			0.37				0.47
Uniform Delay, d1					7.7			28.4				28.9
Progression Factor					0.19			1.00				1.00
Incremental Delay, d2					0.5			3.8				6.5
Delay (s)					1.9			32.2				35.5
Level of Service					A			C				D
Approach Delay (s)		0.0			1.9			32.2			35.5	
Approach LOS		A			A			C			D	
Intersection Summary												
HCM 2000 Control Delay			8.2		HCM 2000 Level of Service				A			
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			80.0		Sum of lost time (s)				14.5			
Intersection Capacity Utilization			61.2%		ICU Level of Service				B			
Analysis Period (min)			15									
c Critical Lane Group												

Existing (Year 2014) PM Peak Hour Traffic Analysis With Existing Timings & Geometrics
 6: N. Webster Street & E. Mifflin Street

Timings



Lane Group	NWT	NET	SWR
Lane Configurations	↑↑	↑	↗
Volume (vph)	745	70	100
Turn Type	NA	NA	Perm
Protected Phases	2	4	
Permitted Phases			4
Detector Phase	2	4	4
Switch Phase			
Minimum Initial (s)	12.0	12.0	12.0
Minimum Split (s)	20.5	18.0	18.0
Total Split (s)	59.0	21.0	21.0
Total Split (%)	73.8%	26.3%	26.3%
Yellow Time (s)	3.0	3.0	3.0
All-Red Time (s)	5.5	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	8.5	6.0	6.0
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	Max	Max	Max
Act Effct Green (s)	50.5	15.0	15.0
Actuated g/C Ratio	0.63	0.19	0.19
v/c Ratio	0.46	0.37	0.47
Control Delay	2.0	32.9	36.4
Queue Delay	0.1	0.0	0.0
Total Delay	2.0	32.9	36.4
LOS	A	C	D
Approach Delay	2.0	32.9	
Approach LOS	A	C	

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 54.4 (68%), Referenced to phase 2:NWT, Start of Green
 Natural Cycle: 45
 Control Type: Pretimed
 Maximum v/c Ratio: 0.47
 Intersection Signal Delay: 8.4
 Intersection Capacity Utilization 61.2%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service B

Splits and Phases: 6: N. Webster Street & E. Mifflin Street



Existing (Year 2014) PM Peak Hour Traffic Analysis With Existing Timings & Geometrics
 6: N. Webster Street & E. Mifflin Street

Queues



Lane Group	NWT	NET	SWR
Lane Group Flow (vph)	867	100	111
v/c Ratio	0.46	0.37	0.47
Control Delay	2.0	32.9	36.4
Queue Delay	0.1	0.0	0.0
Total Delay	2.0	32.9	36.4
Queue Length 50th (ft)	16	44	50
Queue Length 95th (ft)	m31	89	100
Internal Link Dist (ft)	349	58	
Turn Bay Length (ft)			
Base Capacity (vph)	1871	272	237
Starvation Cap Reductn	145	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.50	0.37	0.47

Intersection Summary

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



















Appendix 3

Year 2016 Background Traffic Analysis

Year 2016 Background PM Peak Hour Traffic Analysis With Existing Timings & Geometrics

3: N. Webster Street & E. Washington Avenue

HCM Signalized Intersection Capacity Analysis

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	30	370	925	10	190	0	0	160	445
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0	5.0		3.5			3.5	3.5
Lane Util. Factor					0.91	0.91		1.00			1.00	0.88
Frt					0.92	0.85		1.00			1.00	0.85
Flt Protected					1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)					2626	1297		1395			1644	2460
Flt Permitted					1.00	1.00		0.99			1.00	1.00
Satd. Flow (perm)					2626	1297		1378			1644	2460
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	34	416	1039	11	213	0	0	180	500
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	970	519	0	224	0	0	180	500
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	4%	4%	4%
Parking (#/hr)				5	5		5	5				
Turn Type				Split	NA	Perm	Perm	NA			NA	Perm
Protected Phases		4		2	2			3			3	
Permitted Phases						2	3					3
Actuated Green, G (s)					33.0	33.0		22.0			22.0	22.0
Effective Green, g (s)					33.0	33.0		22.0			22.0	22.0
Actuated g/C Ratio					0.41	0.41		0.28			0.28	0.28
Clearance Time (s)					5.0	5.0		3.5			3.5	3.5
Lane Grp Cap (vph)					1083	535		378			452	676
v/s Ratio Prot					0.37						0.11	
v/s Ratio Perm						c0.40		0.16				c0.20
v/c Ratio					1.07dr	0.97		0.59			0.40	0.74
Uniform Delay, d1					21.9	23.0		25.1			23.6	26.4
Progression Factor					1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2					11.5	32.2		6.7			2.6	7.1
Delay (s)					33.4	55.2		31.8			26.2	33.5
Level of Service					C	E		C			C	C
Approach Delay (s)		0.0			41.0			31.8			31.6	
Approach LOS		A			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			37.4		HCM 2000 Level of Service						D	
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			80.0		Sum of lost time (s)						10.5	
Intersection Capacity Utilization			63.2%		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												

Year 2016 Background PM Peak Hour Traffic Analysis With Existing Timings & Geometrics
 3: N. Webster Street & E. Washington Avenue

Timings

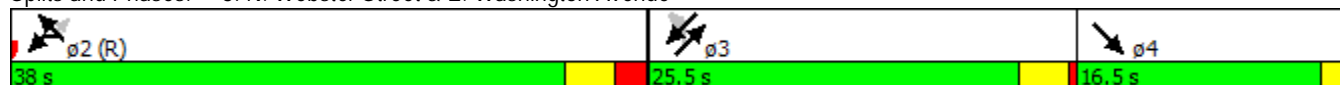


Lane Group	NWT	NWR	NEL	NET	SWT	SWR	ø4
Lane Configurations							
Volume (vph)	370	925	10	190	160	445	
Turn Type	NA	Perm	Perm	NA	NA	Perm	
Protected Phases	2			3	3		4
Permitted Phases		2	3			3	
Detector Phase	2	2	3	3	3	3	
Switch Phase							
Minimum Initial (s)	12.0	12.0	12.0	12.0	12.0	12.0	4.0
Minimum Split (s)	17.0	17.0	15.5	15.5	15.5	15.5	16.5
Total Split (s)	38.0	38.0	25.5	25.5	25.5	25.5	16.5
Total Split (%)	47.5%	47.5%	31.9%	31.9%	31.9%	31.9%	21%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	2.0	2.0	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0		3.5	3.5	3.5	
Lead/Lag			Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?			Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	33.0	33.0		22.0	22.0	22.0	
Actuated g/C Ratio	0.41	0.41		0.28	0.28	0.28	
v/c Ratio	1.07dr	0.97		0.59	0.40	0.74	
Control Delay	34.6	57.9		32.6	26.8	34.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	
Total Delay	34.6	57.9		32.6	26.8	34.2	
LOS	C	E		C	C	C	
Approach Delay	42.7			32.6	32.3		
Approach LOS	D			C	C		

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 35.2 (44%), Referenced to phase 2:NWTL, Start of Green
 Natural Cycle: 80
 Control Type: Pretimed
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 38.8
 Intersection LOS: D
 Intersection Capacity Utilization 63.2%
 ICU Level of Service B
 Analysis Period (min) 15
 dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 3: N. Webster Street & E. Washington Avenue



Year 2016 Background PM Peak Hour Traffic Analysis With Existing Timings & Geometrics
 3: N. Webster Street & E. Washington Avenue

Queues



Lane Group	NWT	NWR	NET	SWT	SWR
Lane Group Flow (vph)	970	519	224	180	500
v/c Ratio	1.07dr	0.97	0.59	0.40	0.74
Control Delay	34.6	57.9	32.6	26.8	34.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.6	57.9	32.6	26.8	34.2
Queue Length 50th (ft)	240	270	97	73	128
Queue Length 95th (ft)	#364	#484	167	128	186
Internal Link Dist (ft)	372		229	229	
Turn Bay Length (ft)					
Base Capacity (vph)	1083	535	379	452	676
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	0.90	0.97	0.59	0.40	0.74
















Intersection Summary

- # 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.

Year 2016 Background PM Peak Hour Traffic Analysis With Existing Timings & Geometrics

6: N. Webster Street & E. Mifflin Street

HCM Signalized Intersection Capacity Analysis

													
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations													
Volume (vph)	0	0	0	0	760	45	25	75	0	0	0	105	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					8.5			6.0				6.0	
Lane Util. Factor					0.95			1.00				1.00	
Frt					0.99			1.00				0.86	
Flt Protected					1.00			0.99				1.00	
Satd. Flow (prot)					2961			1449				1269	
Flt Permitted					1.00			0.99				1.00	
Satd. Flow (perm)					2961			1449				1269	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	0	0	0	844	50	28	83	0	0	0	117	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	894	0	0	111	0	0	0	117	
Parking (#/hr)					5	5	5	5				5	
Turn Type					NA		Perm	NA				Perm	
Protected Phases					2			4					
Permitted Phases							4					4	
Actuated Green, G (s)					50.5			15.0				15.0	
Effective Green, g (s)					50.5			15.0				15.0	
Actuated g/C Ratio					0.63			0.19				0.19	
Clearance Time (s)					8.5			6.0				6.0	
Lane Grp Cap (vph)					1869			271				237	
v/s Ratio Prot					c0.30								
v/s Ratio Perm								0.08				c0.09	
v/c Ratio					0.48			0.41				0.49	
Uniform Delay, d1					7.8			28.6				29.1	
Progression Factor					0.19			1.00				1.00	
Incremental Delay, d2					0.5			4.5				7.2	
Delay (s)					2.0			33.1				36.3	
Level of Service					A			C				D	
Approach Delay (s)		0.0			2.0			33.1			36.3		
Approach LOS		A			A			C			D		
Intersection Summary													
HCM 2000 Control Delay			8.6		HCM 2000 Level of Service					A			
HCM 2000 Volume to Capacity ratio			0.48										
Actuated Cycle Length (s)			80.0		Sum of lost time (s)					14.5			
Intersection Capacity Utilization			62.0%		ICU Level of Service					B			
Analysis Period (min)			15										
c Critical Lane Group													

Year 2016 Background PM Peak Hour Traffic Analysis With Existing Timings & Geometrics
 6: N. Webster Street & E. Mifflin Street

Timings



Lane Group	NWT	NET	SWR
Lane Configurations	↑↑	↖	↗
Volume (vph)	760	75	105
Turn Type	NA	NA	Perm
Protected Phases	2	4	
Permitted Phases			4
Detector Phase	2	4	4
Switch Phase			
Minimum Initial (s)	12.0	12.0	12.0
Minimum Split (s)	20.5	18.0	18.0
Total Split (s)	59.0	21.0	21.0
Total Split (%)	73.8%	26.3%	26.3%
Yellow Time (s)	3.0	3.0	3.0
All-Red Time (s)	5.5	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	8.5	6.0	6.0
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	Max	Max	Max
Act Effct Green (s)	50.5	15.0	15.0
Actuated g/C Ratio	0.63	0.19	0.19
v/c Ratio	0.48	0.41	0.49
Control Delay	2.0	33.9	37.2
Queue Delay	0.1	0.0	0.0
Total Delay	2.1	33.9	37.2
LOS	A	C	D
Approach Delay	2.1	33.9	
Approach LOS	A	C	

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 54.4 (68%), Referenced to phase 2:NWT, Start of Green
 Natural Cycle: 45
 Control Type: Pretimed
 Maximum v/c Ratio: 0.49
 Intersection Signal Delay: 8.9
 Intersection Capacity Utilization 62.0%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service B

Splits and Phases: 6: N. Webster Street & E. Mifflin Street



Year 2016 Background PM Peak Hour Traffic Analysis With Existing Timings & Geometrics
 6: N. Webster Street & E. Mifflin Street

Queues



Lane Group	NWT	NET	SWR
Lane Group Flow (vph)	894	111	117
v/c Ratio	0.48	0.41	0.49
Control Delay	2.0	33.9	37.2
Queue Delay	0.1	0.0	0.0
Total Delay	2.1	33.9	37.2
Queue Length 50th (ft)	15	49	53
Queue Length 95th (ft)	m35	97	104
Internal Link Dist (ft)	349	58	
Turn Bay Length (ft)			
Base Capacity (vph)	1869	271	237
Starvation Cap Reductn	137	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.52	0.41	0.49



















Intersection Summary

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

Year 2016 Background PM Peak Hour Traffic Analysis With Existing Geometrics & Optimized Timings

3: N. Webster Street & E. Washington Avenue

HCM Signalized Intersection Capacity Analysis

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	30	370	925	10	190	0	0	160	445
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0	5.0		3.5			3.5	3.5
Lane Util. Factor					0.91	0.91		1.00			1.00	0.88
Frt					0.92	0.85		1.00			1.00	0.85
Flt Protected					1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)					2626	1297		1395			1644	2460
Flt Permitted					1.00	1.00		0.99			1.00	1.00
Satd. Flow (perm)					2626	1297		1378			1644	2460
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	34	416	1039	11	213	0	0	180	500
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	970	519	0	224	0	0	180	500
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	4%	4%	4%
Parking (#/hr)				5	5		5	5				
Turn Type				Split	NA	Perm	Perm	NA			NA	Perm
Protected Phases		4		2	2			3			3	
Permitted Phases						2	3					3
Actuated Green, G (s)					33.5	33.5		21.5			21.5	21.5
Effective Green, g (s)					33.5	33.5		21.5			21.5	21.5
Actuated g/C Ratio					0.42	0.42		0.27			0.27	0.27
Clearance Time (s)					5.0	5.0		3.5			3.5	3.5
Lane Grp Cap (vph)					1099	543		370			441	661
v/s Ratio Prot					0.37						0.11	
v/s Ratio Perm						c0.40		0.16				c0.20
v/c Ratio					1.05dr	0.96		0.61			0.41	0.76
Uniform Delay, d1					21.4	22.5		25.5			24.0	26.8
Progression Factor					1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2					10.3	29.1		7.2			2.8	7.9
Delay (s)					31.7	51.6		32.7			26.8	34.7
Level of Service					C	D		C			C	C
Approach Delay (s)		0.0			38.7			32.7			32.6	
Approach LOS		A			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			36.4		HCM 2000 Level of Service						D	
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			80.0		Sum of lost time (s)						10.5	
Intersection Capacity Utilization			63.2%		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												

Year 2016 Background PM Peak Hour Traffic Analysis With Existing Geometrics & Optimized Timings
 3: N. Webster Street & E. Washington Avenue Timings

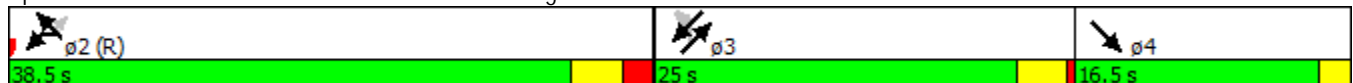


Lane Group	NWT	NWR	NEL	NET	SWT	SWR	ø4
Lane Configurations	↔↔	↗		↖	↖	↗↗	
Volume (vph)	370	925	10	190	160	445	
Turn Type	NA	Perm	Perm	NA	NA	Perm	
Protected Phases	2			3	3		4
Permitted Phases		2	3			3	
Detector Phase	2	2	3	3	3	3	
Switch Phase							
Minimum Initial (s)	12.0	12.0	12.0	12.0	12.0	12.0	4.0
Minimum Split (s)	17.0	17.0	15.5	15.5	15.5	15.5	16.5
Total Split (s)	38.5	38.5	25.0	25.0	25.0	25.0	16.5
Total Split (%)	48.1%	48.1%	31.3%	31.3%	31.3%	31.3%	21%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	2.0	2.0	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0		3.5	3.5	3.5	
Lead/Lag			Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?			Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	33.5	33.5		21.5	21.5	21.5	
Actuated g/C Ratio	0.42	0.42		0.27	0.27	0.27	
v/c Ratio	1.05dr	0.96		0.61	0.41	0.76	
Control Delay	32.9	54.3		33.6	27.4	35.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	
Total Delay	32.9	54.3		33.6	27.4	35.6	
LOS	C	D		C	C	D	
Approach Delay	40.4			33.6	33.4		
Approach LOS	D			C	C		

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 35.2 (44%), Referenced to phase 2:NWTL, Start of Green
 Natural Cycle: 80
 Control Type: Pretimed
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 37.8 Intersection LOS: D
 Intersection Capacity Utilization 63.2% ICU Level of Service B
 Analysis Period (min) 15
 dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 3: N. Webster Street & E. Washington Avenue



Year 2016 Background PM Peak Hour Traffic Analysis With Existing Geometrics & Optimized Timings
 3: N. Webster Street & E. Washington Avenue Queues



Lane Group	NWT	NWR	NET	SWT	SWR
Lane Group Flow (vph)	970	519	224	180	500
v/c Ratio	1.05dr	0.96	0.61	0.41	0.76
Control Delay	32.9	54.3	33.6	27.4	35.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.9	54.3	33.6	27.4	35.6
Queue Length 50th (ft)	237	267	97	74	130
Queue Length 95th (ft)	#359	#480	169	130	#190
Internal Link Dist (ft)	372		229	229	
Turn Bay Length (ft)					
Base Capacity (vph)	1099	543	370	441	661
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	0.88	0.96	0.61	0.41	0.76
















Intersection Summary

- # 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.

Year 2016 Background PM Peak Hour Traffic Analysis With Existing Geometrics & Optimized Timings

6: N. Webster Street & E. Mifflin Street

HCM Signalized Intersection Capacity Analysis

													
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations													
Volume (vph)	0	0	0	0	760	45	25	75	0	0	0	105	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					8.5			6.0				6.0	
Lane Util. Factor					0.95			1.00				1.00	
Frt					0.99			1.00				0.86	
Flt Protected					1.00			0.99				1.00	
Satd. Flow (prot)					2961			1449				1269	
Flt Permitted					1.00			0.99				1.00	
Satd. Flow (perm)					2961			1449				1269	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	0	0	0	844	50	28	83	0	0	0	117	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	894	0	0	111	0	0	0	117	
Parking (#/hr)					5	5	5	5				5	
Turn Type					NA		Perm	NA				Perm	
Protected Phases					2			4					
Permitted Phases							4					4	
Actuated Green, G (s)					50.5			15.0				15.0	
Effective Green, g (s)					50.5			15.0				15.0	
Actuated g/C Ratio					0.63			0.19				0.19	
Clearance Time (s)					8.5			6.0				6.0	
Lane Grp Cap (vph)					1869			271				237	
v/s Ratio Prot					c0.30								
v/s Ratio Perm								0.08				c0.09	
v/c Ratio					0.48			0.41				0.49	
Uniform Delay, d1					7.8			28.6				29.1	
Progression Factor					0.19			1.00				1.00	
Incremental Delay, d2					0.5			4.5				7.2	
Delay (s)					1.9			33.1				36.3	
Level of Service					A			C				D	
Approach Delay (s)		0.0			1.9			33.1			36.3		
Approach LOS		A			A			C			D		
Intersection Summary													
HCM 2000 Control Delay			8.6		HCM 2000 Level of Service					A			
HCM 2000 Volume to Capacity ratio			0.48										
Actuated Cycle Length (s)			80.0		Sum of lost time (s)					14.5			
Intersection Capacity Utilization			62.0%		ICU Level of Service					B			
Analysis Period (min)			15										
c Critical Lane Group													

Year 2016 Background PM Peak Hour Traffic Analysis With Existing Geometrics & Optimized Timings
 6: N. Webster Street & E. Mifflin Street Timings



Lane Group	NWT	NET	SWR
Lane Configurations	↑↑	↑	↑
Volume (vph)	760	75	105
Turn Type	NA	NA	Perm
Protected Phases	2	4	
Permitted Phases			4
Detector Phase	2	4	4
Switch Phase			
Minimum Initial (s)	12.0	12.0	12.0
Minimum Split (s)	20.5	18.0	18.0
Total Split (s)	59.0	21.0	21.0
Total Split (%)	73.8%	26.3%	26.3%
Yellow Time (s)	3.0	3.0	3.0
All-Red Time (s)	5.5	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	8.5	6.0	6.0
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	Max	Max	Max
Act Effct Green (s)	50.5	15.0	15.0
Actuated g/C Ratio	0.63	0.19	0.19
v/c Ratio	0.48	0.41	0.49
Control Delay	2.0	33.9	37.2
Queue Delay	0.1	0.0	0.0
Total Delay	2.0	33.9	37.2
LOS	A	C	D
Approach Delay	2.0	33.9	
Approach LOS	A	C	

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 54.4 (68%), Referenced to phase 2:NWT, Start of Green
 Natural Cycle: 45
 Control Type: Pretimed
 Maximum v/c Ratio: 0.49
 Intersection Signal Delay: 8.9 Intersection LOS: A
 Intersection Capacity Utilization 62.0% ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 6: N. Webster Street & E. Mifflin Street



Year 2016 Background PM Peak Hour Traffic Analysis With Existing Geometrics & Optimized Timings
 6: N. Webster Street & E. Mifflin Street

Queues



Lane Group	NWT	NET	SWR
Lane Group Flow (vph)	894	111	117
v/c Ratio	0.48	0.41	0.49
Control Delay	2.0	33.9	37.2
Queue Delay	0.1	0.0	0.0
Total Delay	2.0	33.9	37.2
Queue Length 50th (ft)	15	49	53
Queue Length 95th (ft)	m35	97	104
Internal Link Dist (ft)	349	58	
Turn Bay Length (ft)			
Base Capacity (vph)	1869	271	237
Starvation Cap Reductn	138	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.52	0.41	0.49

Intersection Summary

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













Appendix 4

Year 2016 Total Traffic Analysis

Year 2016 Total PM Peak Hour Traffic Analysis With Existing Timings & Geometrics

3: N. Webster Street & E. Washington Avenue

HCM Signalized Intersection Capacity Analysis

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑			↑↑	↑		↑			↑	↑↑
Volume (vph)	0	0	0	30	375	925	15	190	0	0	160	502
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0	5.0		3.5			3.5	3.5
Lane Util. Factor					0.91	0.91		1.00			1.00	0.88
Frt					0.92	0.85		1.00			1.00	0.85
Flt Protected					1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)					2627	1297		1393			1644	2460
Flt Permitted					1.00	1.00		0.98			1.00	1.00
Satd. Flow (perm)					2627	1297		1364			1644	2460
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	34	421	1039	17	213	0	0	180	564
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	975	519	0	230	0	0	180	564
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	4%	4%	4%
Parking (#/hr)				5	5		5	5				
Turn Type				Split	NA	Perm	Perm	NA			NA	Perm
Protected Phases		4		2	2			3			3	
Permitted Phases						2	3					3
Actuated Green, G (s)					33.0	33.0		22.0			22.0	22.0
Effective Green, g (s)					33.0	33.0		22.0			22.0	22.0
Actuated g/C Ratio					0.41	0.41		0.28			0.28	0.28
Clearance Time (s)					5.0	5.0		3.5			3.5	3.5
Lane Grp Cap (vph)					1083	535		375			452	676
v/s Ratio Prot					0.37						0.11	
v/s Ratio Perm						c0.40		0.17				c0.23
v/c Ratio					1.07dr	0.97		0.61			0.40	0.83
Uniform Delay, d1					22.0	23.0		25.3			23.6	27.3
Progression Factor					1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2					11.9	32.2		7.3			2.6	11.6
Delay (s)					33.8	55.2		32.6			26.2	38.9
Level of Service					C	E		C			C	D
Approach Delay (s)		0.0			41.3			32.6			35.8	
Approach LOS		A			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			38.8		HCM 2000 Level of Service						D	
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			80.0		Sum of lost time (s)						10.5	
Intersection Capacity Utilization			65.9%		ICU Level of Service						C	
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.												
c Critical Lane Group												

Year 2016 Total PM Peak Hour Traffic Analysis With Existing Timings & Geometrics
 3: N. Webster Street & E. Washington Avenue

Timings

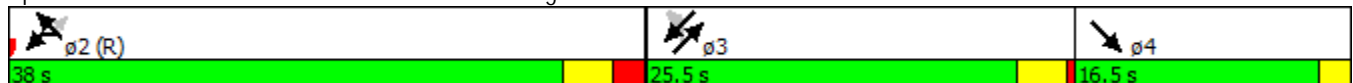


Lane Group	NWT	NWR	NEL	NET	SWT	SWR	ø4
Lane Configurations	↕↕	↗		↕	↕	↗↗	
Volume (vph)	375	925	15	190	160	502	
Turn Type	NA	Perm	Perm	NA	NA	Perm	
Protected Phases	2			3	3		4
Permitted Phases		2	3			3	
Detector Phase	2	2	3	3	3	3	
Switch Phase							
Minimum Initial (s)	12.0	12.0	12.0	12.0	12.0	12.0	4.0
Minimum Split (s)	17.0	17.0	15.5	15.5	15.5	15.5	16.5
Total Split (s)	38.0	38.0	25.5	25.5	25.5	25.5	16.5
Total Split (%)	47.5%	47.5%	31.9%	31.9%	31.9%	31.9%	21%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	2.0	2.0	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0		3.5	3.5	3.5	
Lead/Lag			Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?			Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	33.0	33.0		22.0	22.0	22.0	
Actuated g/C Ratio	0.41	0.41		0.28	0.28	0.28	
v/c Ratio	1.07dr	0.97		0.61	0.40	0.83	
Control Delay	35.1	57.9		33.6	26.8	40.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	
Total Delay	35.1	57.9		33.6	26.8	40.1	
LOS	D	E		C	C	D	
Approach Delay	43.0			33.6	36.9		
Approach LOS	D			C	D		

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 35.2 (44%), Referenced to phase 2:NWTL, Start of Green
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 40.3
 Intersection LOS: D
 Intersection Capacity Utilization 65.9%
 ICU Level of Service C
 Analysis Period (min) 15
 dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 3: N. Webster Street & E. Washington Avenue



Year 2016 Total PM Peak Hour Traffic Analysis With Existing Timings & Geometrics
 3: N. Webster Street & E. Washington Avenue

Queues



Lane Group	NWT	NWR	NET	SWT	SWR
Lane Group Flow (vph)	975	519	230	180	564
v/c Ratio	1.07dr	0.97	0.61	0.40	0.83
Control Delay	35.1	57.9	33.6	26.8	40.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	35.1	57.9	33.6	26.8	40.1
Queue Length 50th (ft)	242	270	100	73	150
Queue Length 95th (ft)	#367	#484	172	128	#238
Internal Link Dist (ft)	372		229	229	
Turn Bay Length (ft)					
Base Capacity (vph)	1083	535	374	452	676
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	0.90	0.97	0.61	0.40	0.83

Intersection Summary

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.

Year 2016 Total PM Peak Hour Traffic Analysis With Existing Timings & Geometrics

6: N. Webster Street & E. Mifflin Street

HCM Signalized Intersection Capacity Analysis

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	817	55	25	75	0	0	0	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					8.5			6.0				6.0
Lane Util. Factor					0.95			1.00				1.00
Frt					0.99			1.00				0.86
Flt Protected					1.00			0.99				1.00
Satd. Flow (prot)					2958			1449				1269
Flt Permitted					1.00			0.99				1.00
Satd. Flow (perm)					2958			1449				1269
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	0	908	61	28	83	0	0	0	130
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	969	0	0	111	0	0	0	130
Parking (#/hr)					5	5	5	5				5
Turn Type					NA		Perm	NA				Perm
Protected Phases					2			4				
Permitted Phases							4					4
Actuated Green, G (s)					50.5			15.0				15.0
Effective Green, g (s)					50.5			15.0				15.0
Actuated g/C Ratio					0.63			0.19				0.19
Clearance Time (s)					8.5			6.0				6.0
Lane Grp Cap (vph)					1867			271				237
v/s Ratio Prot					c0.33							
v/s Ratio Perm								0.08				c0.10
v/c Ratio					0.52			0.41				0.55
Uniform Delay, d1					8.1			28.6				29.4
Progression Factor					0.19			1.00				1.00
Incremental Delay, d2					0.5			4.5				8.8
Delay (s)					2.1			33.1				38.3
Level of Service					A			C				D
Approach Delay (s)		0.0			2.1			33.1			38.3	
Approach LOS		A			A			C			D	
Intersection Summary												
HCM 2000 Control Delay			8.8		HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			80.0		Sum of lost time (s)					14.5		
Intersection Capacity Utilization			64.1%		ICU Level of Service					C		
Analysis Period (min)			15									
c Critical Lane Group												

Year 2016 Total PM Peak Hour Traffic Analysis With Existing Timings & Geometrics
 6: N. Webster Street & E. Mifflin Street

Timings



Lane Group	NWT	NET	SWR
Lane Configurations	↑↑	↑	↑
Volume (vph)	817	75	117
Turn Type	NA	NA	Perm
Protected Phases	2	4	
Permitted Phases			4
Detector Phase	2	4	4
Switch Phase			
Minimum Initial (s)	12.0	12.0	12.0
Minimum Split (s)	20.5	18.0	18.0
Total Split (s)	59.0	21.0	21.0
Total Split (%)	73.8%	26.3%	26.3%
Yellow Time (s)	3.0	3.0	3.0
All-Red Time (s)	5.5	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	8.5	6.0	6.0
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	Max	Max	Max
Act Effct Green (s)	50.5	15.0	15.0
Actuated g/C Ratio	0.63	0.19	0.19
v/c Ratio	0.52	0.41	0.55
Control Delay	2.1	33.9	39.2
Queue Delay	0.1	0.0	0.0
Total Delay	2.2	33.9	39.2
LOS	A	C	D
Approach Delay	2.2	33.9	
Approach LOS	A	C	

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 54.4 (68%), Referenced to phase 2:NWT, Start of Green
 Natural Cycle: 50
 Control Type: Pretimed
 Maximum v/c Ratio: 0.55
 Intersection Signal Delay: 9.1
 Intersection Capacity Utilization 64.1%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service C

Splits and Phases: 6: N. Webster Street & E. Mifflin Street



Year 2016 Total PM Peak Hour Traffic Analysis With Existing Timings & Geometrics
 6: N. Webster Street & E. Mifflin Street

Queues





















Lane Group	NWT	NET	SWR
Lane Group Flow (vph)	969	111	130
v/c Ratio	0.52	0.41	0.55
Control Delay	2.1	33.9	39.2
Queue Delay	0.1	0.0	0.0
Total Delay	2.2	33.9	39.2
Queue Length 50th (ft)	16	49	59
Queue Length 95th (ft)	m38	97	115
Internal Link Dist (ft)	349	58	
Turn Bay Length (ft)			
Base Capacity (vph)	1867	271	237
Starvation Cap Reductn	127	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.56	0.41	0.55

Intersection Summary

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

Year 2016 Total PM Peak Hour Traffic Analysis With Existing Geometrics & Optimized Timings
 3: N. Webster Street & E. Washington Avenue

HCM Signalized Intersection Capacity Analysis

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	30	375	925	15	190	0	0	160	502
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0	5.0		3.5			3.5	3.5
Lane Util. Factor					0.91	0.91		1.00			1.00	0.88
Frt					0.92	0.85		1.00			1.00	0.85
Flt Protected					1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)					2627	1297		1393			1644	2460
Flt Permitted					1.00	1.00		0.97			1.00	1.00
Satd. Flow (perm)					2627	1297		1363			1644	2460
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	34	421	1039	17	213	0	0	180	564
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	975	519	0	230	0	0	180	564
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	4%	4%	4%
Parking (#/hr)				5	5		5	5				
Turn Type				Split	NA	Perm	Perm	NA			NA	Perm
Protected Phases		4		2	2			3			3	
Permitted Phases						2	3					3
Actuated Green, G (s)					33.5	33.5		21.5			21.5	21.5
Effective Green, g (s)					33.5	33.5		21.5			21.5	21.5
Actuated g/C Ratio					0.42	0.42		0.27			0.27	0.27
Clearance Time (s)					5.0	5.0		3.5			3.5	3.5
Lane Grp Cap (vph)					1100	543		366			441	661
v/s Ratio Prot					0.37						0.11	
v/s Ratio Perm						c0.40		0.17				c0.23
v/c Ratio					1.05dr	0.96		0.63			0.41	0.85
Uniform Delay, d1					21.5	22.5		25.7			24.0	27.8
Progression Factor					1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2					10.6	29.1		7.9			2.8	13.2
Delay (s)					32.1	51.6		33.7			26.8	40.9
Level of Service					C	D		C			C	D
Approach Delay (s)		0.0			38.9			33.7			37.5	
Approach LOS		A			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			38.0		HCM 2000 Level of Service						D	
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			80.0		Sum of lost time (s)						10.5	
Intersection Capacity Utilization			65.9%		ICU Level of Service						C	
Analysis Period (min)			15									
dr Defacto Right Lane. Recode with 1 though lane as a right lane.												
c Critical Lane Group												

Year 2016 Total PM Peak Hour Traffic Analysis With Existing Geometrics & Optimized Timings
 3: N. Webster Street & E. Washington Avenue Timings

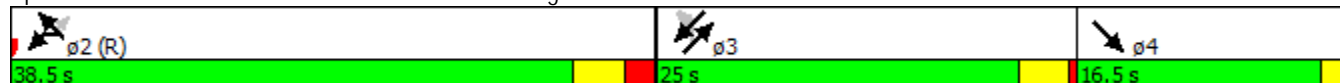


Lane Group	NWT	NWR	NEL	NET	SWT	SWR	ø4
Lane Configurations	↕↕	↕		↕	↕	↕↕	
Volume (vph)	375	925	15	190	160	502	
Turn Type	NA	Perm	Perm	NA	NA	Perm	
Protected Phases	2			3	3		4
Permitted Phases		2	3			3	
Detector Phase	2	2	3	3	3	3	
Switch Phase							
Minimum Initial (s)	12.0	12.0	12.0	12.0	12.0	12.0	4.0
Minimum Split (s)	17.0	17.0	15.5	15.5	15.5	15.5	16.5
Total Split (s)	38.5	38.5	25.0	25.0	25.0	25.0	16.5
Total Split (%)	48.1%	48.1%	31.3%	31.3%	31.3%	31.3%	21%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	2.0	2.0	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0		3.5	3.5	3.5	
Lead/Lag			Lead	Lead	Lead	Lead	Lag
Lead-Lag Optimize?			Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	33.5	33.5		21.5	21.5	21.5	
Actuated g/C Ratio	0.42	0.42		0.27	0.27	0.27	
v/c Ratio	1.05dr	0.96		0.63	0.41	0.85	
Control Delay	33.3	54.3		34.6	27.4	42.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	
Total Delay	33.3	54.3		34.6	27.4	42.3	
LOS	C	D		C	C	D	
Approach Delay	40.6			34.6	38.7		
Approach LOS	D			C	D		

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 35.2 (44%), Referenced to phase 2:NWTL, Start of Green
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 39.5 Intersection LOS: D
 Intersection Capacity Utilization 65.9% ICU Level of Service C
 Analysis Period (min) 15
 dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 3: N. Webster Street & E. Washington Avenue



Year 2016 Total PM Peak Hour Traffic Analysis With Existing Geometrics & Optimized Timings
 3: N. Webster Street & E. Washington Avenue Queues


















Lane Group	NWT	NWR	NET	SWT	SWR
Lane Group Flow (vph)	975	519	230	180	564
v/c Ratio	1.05dr	0.96	0.63	0.41	0.85
Control Delay	33.3	54.3	34.6	27.4	42.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.3	54.3	34.6	27.4	42.3
Queue Length 50th (ft)	239	267	101	74	151
Queue Length 95th (ft)	#362	#480	174	130	#242
Internal Link Dist (ft)	372		229	229	
Turn Bay Length (ft)					
Base Capacity (vph)	1099	543	366	441	661
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	0.89	0.96	0.63	0.41	0.85

Intersection Summary

- # 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.

Year 2016 Total PM Peak Hour Traffic Analysis With Existing Geometrics & Optimized Timings
 6: N. Webster Street & E. Mifflin Street

HCM Signalized Intersection Capacity Analysis

													
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations													
Volume (vph)	0	0	0	0	817	55	25	75	0	0	0	117	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					8.5			6.0				6.0	
Lane Util. Factor					0.95			1.00				1.00	
Frt					0.99			1.00				0.86	
Flt Protected					1.00			0.99				1.00	
Satd. Flow (prot)					2958			1449				1269	
Flt Permitted					1.00			0.99				1.00	
Satd. Flow (perm)					2958			1449				1269	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	0	0	0	908	61	28	83	0	0	0	130	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	969	0	0	111	0	0	0	130	
Parking (#/hr)					5	5	5	5				5	
Turn Type					NA		Perm	NA				Perm	
Protected Phases					2			4					
Permitted Phases							4					4	
Actuated Green, G (s)					50.5			15.0				15.0	
Effective Green, g (s)					50.5			15.0				15.0	
Actuated g/C Ratio					0.63			0.19				0.19	
Clearance Time (s)					8.5			6.0				6.0	
Lane Grp Cap (vph)					1867			271				237	
v/s Ratio Prot					c0.33								
v/s Ratio Perm								0.08				c0.10	
v/c Ratio					0.52			0.41				0.55	
Uniform Delay, d1					8.1			28.6				29.4	
Progression Factor					0.21			1.00				1.00	
Incremental Delay, d2					0.5			4.5				8.8	
Delay (s)					2.2			33.1				38.3	
Level of Service					A			C				D	
Approach Delay (s)		0.0			2.2			33.1			38.3		
Approach LOS		A			A			C			D		
Intersection Summary													
HCM 2000 Control Delay			8.9		HCM 2000 Level of Service					A			
HCM 2000 Volume to Capacity ratio			0.53										
Actuated Cycle Length (s)			80.0		Sum of lost time (s)					14.5			
Intersection Capacity Utilization			64.1%		ICU Level of Service					C			
Analysis Period (min)			15										
c Critical Lane Group													

Year 2016 Total PM Peak Hour Traffic Analysis With Existing Geometrics & Optimized Timings
 6: N. Webster Street & E. Mifflin Street Timings



Lane Group	NWT	NET	SWR
Lane Configurations	↑↑	↖	↗
Volume (vph)	817	75	117
Turn Type	NA	NA	Perm
Protected Phases	2	4	
Permitted Phases			4
Detector Phase	2	4	4
Switch Phase			
Minimum Initial (s)	12.0	12.0	12.0
Minimum Split (s)	20.5	18.0	18.0
Total Split (s)	59.0	21.0	21.0
Total Split (%)	73.8%	26.3%	26.3%
Yellow Time (s)	3.0	3.0	3.0
All-Red Time (s)	5.5	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	8.5	6.0	6.0
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	Max	Max	Max
Act Effct Green (s)	50.5	15.0	15.0
Actuated g/C Ratio	0.63	0.19	0.19
v/c Ratio	0.52	0.41	0.55
Control Delay	2.2	33.9	39.2
Queue Delay	0.1	0.0	0.0
Total Delay	2.3	33.9	39.2
LOS	A	C	D
Approach Delay	2.3	33.9	
Approach LOS	A	C	

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 54.4 (68%), Referenced to phase 2:NWT, Start of Green
 Natural Cycle: 50
 Control Type: Pretimed
 Maximum v/c Ratio: 0.55
 Intersection Signal Delay: 9.1 Intersection LOS: A
 Intersection Capacity Utilization 64.1% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 6: N. Webster Street & E. Mifflin Street



Year 2016 Total PM Peak Hour Traffic Analysis With Existing Geometrics & Optimized Timings
 6: N. Webster Street & E. Mifflin Street

Queues



Lane Group	NWT	NET	SWR
Lane Group Flow (vph)	969	111	130
v/c Ratio	0.52	0.41	0.55
Control Delay	2.2	33.9	39.2
Queue Delay	0.1	0.0	0.0
Total Delay	2.3	33.9	39.2
Queue Length 50th (ft)	16	49	59
Queue Length 95th (ft)	m37	97	115
Internal Link Dist (ft)	349	58	
Turn Bay Length (ft)			
Base Capacity (vph)	1867	271	237
Starvation Cap Reductn	127	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.56	0.41	0.55

Intersection Summary

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