
















2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 1: Tremont Street & Williams Street & Broadway Weekday Morning

												
Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	32	53	58	11	398	5	47	79	11	26	378	119
Future Volume (vph)	32	53	58	11	398	5	47	79	11	26	378	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
Ped Bike Factor											0.99	
Frt		0.940					0.980				0.970	
Flt Protected		0.990					0.963				0.997	
Satd. Flow (prot)	0	1837	0	0	0	0	1645	0	0	0	1860	0
Flt Permitted		0.825					0.663				0.834	
Satd. Flow (perm)	0	1531	0	0	0	0	1132	0	0	0	1556	0
Satd. Flow (RTOR)		4					11				16	
Confl. Bikes (#/hr)												5
Peak Hour Factor	0.84	0.84	0.84	0.92	0.85	0.85	0.85	0.85	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	3%	24%	0%	2%	2%	0%	9%	8%	0%	12%	12%	10%
Parking (#/hr)					0	0	2	0				
Shared Lane Traffic (%)												
Turn Type	Perm	NA			Perm	Perm	NA		Perm	Perm	NA	
Protected Phases		3					3				1	
Permitted Phases	3				3	3			1	1		
Detector Phase	3	3			3	3	3		1	1	1	
Switch Phase												
Minimum Initial (s)	8.0	8.0			8.0	8.0	8.0		10.0	10.0	10.0	
Minimum Split (s)	15.0	15.0			15.0	15.0	15.0		17.0	17.0	17.0	
Total Split (s)	39.0	39.0			39.0	39.0	39.0		32.0	32.0	32.0	
Total Split (%)	43.3%	43.3%			43.3%	43.3%	43.3%		35.6%	35.6%	35.6%	
Maximum Green (s)	32.0	32.0			32.0	32.0	32.0		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)	3.0	3.0			3.0	3.0	3.0		3.0	3.0	3.0	
Lost Time Adjust (s)		0.0					0.0				0.0	
Total Lost Time (s)		7.0					7.0				7.0	
Lead/Lag									Lead	Lead	Lead	
Lead-Lag Optimize?									Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0		2.0	2.0	2.0	
Recall Mode	C-Max	C-Max			C-Max	C-Max	C-Max		None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		51.0					51.0				25.0	
Actuated g/C Ratio		0.57					0.57				0.28	
v/c Ratio		0.21					0.96				1.47	
Control Delay		10.1					45.7				250.9	
Queue Delay		0.0					0.0				0.0	
Total Delay		10.1					45.7				250.9	
LOS		B					D				F	
Approach Delay		10.1					45.7				250.9	
Approach LOS		B					D				F	

Intersection Summary

Cycle Length: 90

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 1: Tremont Street & Williams Street & Broadway

Weekday Morning



Lane Group	SBL	SBT	SBR	SBR2	Ø2
Lane Configurations		↕			
Traffic Volume (vph)	16	336	5	26	
Future Volume (vph)	16	336	5	26	
Lane Util. Factor	1.00	1.00	1.00	1.00	
Ped Bike Factor					
Frt		0.989			
Flt Protected		0.998			
Satd. Flow (prot)	0	1889	0	0	
Flt Permitted		0.890			
Satd. Flow (perm)	0	1685	0	0	
Satd. Flow (RTOR)		4			
Confl. Bikes (#/hr)					
Peak Hour Factor	0.79	0.79	0.79	0.79	
Heavy Vehicles (%)	0%	13%	0%	16%	
Parking (#/hr)					
Shared Lane Traffic (%)					
Turn Type	Perm	NA			
Protected Phases		1			2
Permitted Phases	1				
Detector Phase	1	1			
Switch Phase					
Minimum Initial (s)	10.0	10.0			7.0
Minimum Split (s)	17.0	17.0			19.0
Total Split (s)	32.0	32.0			19.0
Total Split (%)	35.6%	35.6%			21%
Maximum Green (s)	25.0	25.0			16.0
Yellow Time (s)	4.0	4.0			2.0
All-Red Time (s)	3.0	3.0			1.0
Lost Time Adjust (s)		0.0			
Total Lost Time (s)		7.0			
Lead/Lag	Lead	Lead			Lag
Lead-Lag Optimize?	Yes	Yes			Yes
Vehicle Extension (s)	2.0	2.0			2.0
Recall Mode	None	None			None
Walk Time (s)					7.0
Flash Dont Walk (s)					9.0
Pedestrian Calls (#/hr)					0
Act Effct Green (s)		25.0			
Actuated g/C Ratio		0.28			
v/c Ratio		1.03			
Control Delay		83.1			
Queue Delay		0.0			
Total Delay		83.1			
LOS		F			
Approach Delay		83.1			
Approach LOS		F			

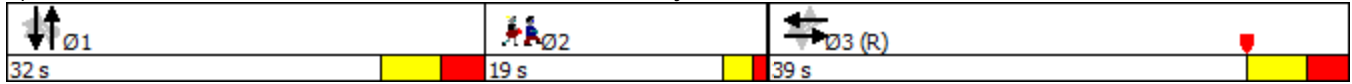
Intersection Summary

Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 1: Tremont Street & Williams Street & Broadway Weekday Morning

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Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 3:EBWB, Start of Yellow, Master Intersection  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.47  
 Intersection Signal Delay: 120.6 Intersection LOS: F  
 Intersection Capacity Utilization 97.5% ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 1: Tremont Street & Williams Street & Broadway



## Queues

## 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)

## 1: Tremont Street &amp; Williams Street &amp; Broadway

















Weekday Morning

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	182	622	651	484
v/c Ratio	0.21	0.96	1.47	1.03
Control Delay	10.1	45.7	250.9	83.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.1	45.7	250.9	83.1
Queue Length 50th (ft)	46	222	~511	~296
Queue Length 95th (ft)	74	#510	#634	#392
Internal Link Dist (ft)	104	51	615	125
Turn Bay Length (ft)				
Base Capacity (vph)	869	646	443	470
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	0.21	0.96	1.47	1.03

## Intersection Summary

- ~ 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.

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 2: 2nd Street & Broadway Weekday Morning

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	122	35	167	444	149	16	26	10	32	136	116
Future Volume (vph)	32	122	35	167	444	149	16	26	10	32	136	116
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
Ped Bike Factor												
Frt		0.975			0.973			0.974			0.945	
Flt Protected		0.992			0.989			0.985			0.994	
Satd. Flow (prot)	0	1754	0	0	1661	0	0	1946	0	0	1476	0
Flt Permitted		0.992			0.989			0.985			0.994	
Satd. Flow (perm)	0	1754	0	0	1661	0	0	1946	0	0	1476	0
Confl. Peds. (#/hr)			10			8			68			10
Peak Hour Factor	0.25	0.25	0.25	0.83	0.83	0.83	0.58	0.58	0.58	0.81	0.81	0.81
Heavy Vehicles (%)	0%	0%	0%	0%	7%	5%	7%	8%	0%	0%	8%	2%
Parking (#/hr)	0	1	0	0	1	0				0	1	0
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Control Type: Unsignalized  
 Intersection Capacity Utilization 80.8% ICU Level of Service D  
 Analysis Period (min) 15

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 3: Winnisimmet Street & Cross Street/ Everett Avenue & Broadway Weekday Morning

	→	↘	↙	←	↖	↓	↗	↘	↙	↗
Lane Group	EBT	EBR	WBL2	WBT	SBL	SBT	SBR2	NEL2	NEL	NER
Lane Configurations	↘		↙	↗		↗	↘		↘	
Traffic Volume (vph)	154	10	284	378	67	269	108	5	0	5
Future Volume (vph)	154	10	284	378	67	269	108	5	0	5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							0.75			
Frt	0.992						0.850		0.932	
Flt Protected			0.950			0.990			0.976	
Satd. Flow (prot)	1743	0	1569	1605	0	1631	1346	0	1753	0
Flt Permitted			0.312			0.990			0.976	
Satd. Flow (perm)	1743	0	515	1605	0	1631	1010	0	1753	0
Satd. Flow (RTOR)							129			
Confl. Peds. (#/hr)							78			
Confl. Bikes (#/hr)										
Peak Hour Factor	0.25	0.25	0.92	0.92	0.84	0.84	0.84	0.25	0.25	0.25
Heavy Vehicles (%)	0%	0%	7%	6%	0%	4%	8%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	8	0	0	0	0	0	0
Parking (#/hr)	1	0	0	1	0	1	0	0	1	0
Shared Lane Traffic (%)										
Turn Type	NA		Perm	NA	Perm	NA	Perm	Perm	Prot	
Protected Phases	4			8		6!			2!	
Permitted Phases			8		6		6	2		
Detector Phase	4		8	8	6	6	6	2	2	
Switch Phase										
Minimum Initial (s)	5.0		10.0	10.0	6.0	6.0	6.0	5.0	5.0	
Minimum Split (s)	22.5		20.0	20.0	20.0	20.0	20.0	22.5	22.5	
Total Split (s)	62.0		62.0	62.0	28.0	28.0	28.0	28.0	28.0	
Total Split (%)	68.9%		68.9%	68.9%	31.1%	31.1%	31.1%	31.1%	31.1%	
Maximum Green (s)	57.5		57.0	57.0	23.0	23.0	23.0	23.5	23.5	
Yellow Time (s)	3.5		3.0	3.0	3.0	3.0	3.0	3.5	3.5	
All-Red Time (s)	1.0		2.0	2.0	2.0	2.0	2.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0		0.0	0.0		0.0	
Total Lost Time (s)	4.5		5.0	5.0		5.0	5.0		4.5	
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		C-Min	C-Min	Min	Min	Min	None	None	
Walk Time (s)	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0		8.0	8.0	8.0	8.0	8.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	0	0	0	0	
Act Effct Green (s)	57.4		56.9	56.9		23.1	23.1		23.6	
Actuated g/C Ratio	0.64		0.63	0.63		0.26	0.26		0.26	
v/c Ratio	0.59		0.95	0.41		0.96	0.36		0.09	
Control Delay	12.1		45.7	6.5		69.6	8.4		25.9	
Queue Delay	0.6		23.5	4.6		58.8	0.0		1.4	
Total Delay	12.7		69.2	11.1		128.4	8.4		27.3	
LOS	B		E	B		F	A		C	
Approach Delay	12.7			36.0		99.1			27.3	
Approach LOS	B			D		F			C	

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 3: Winnisimmet Street & Cross Street/Everett Avenue & Broadway Weekday Morning

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 8 (9%), Referenced to phase 8:WBTL, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 45.1 Intersection LOS: D  
 Intersection Capacity Utilization 76.0% ICU Level of Service D  
 Analysis Period (min) 15  
 ! Phase conflict between lane groups.

Splits and Phases: 3: Winnisimmet Street & Cross Street/Everett Avenue & Broadway

↖ Ø2	→ Ø4
28 s	62 s
↘ Ø6	← Ø8 (R)
28 s	62 s

Queues 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
**3: Winnisimmet Street & Cross Street/Everett Avenue & Broadway** Weekday Morning

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	→	↙	←	↓	↘	↗
Lane Group	EBT	WBL2	WBT	SBT	SBR2	NEL
Lane Group Flow (vph)	656	309	411	400	129	40
v/c Ratio	0.59	0.95	0.41	0.96	0.36	0.09
Control Delay	12.1	45.7	6.5	69.6	8.4	25.9
Queue Delay	0.6	23.5	4.6	58.8	0.0	1.4
Total Delay	12.7	69.2	11.1	128.4	8.4	27.3
Queue Length 50th (ft)	222	132	83	225	0	17
Queue Length 95th (ft)	47	m#268	m114	#362	36	12
Internal Link Dist (ft)	245		148	301		296
Turn Bay Length (ft)						
Base Capacity (vph)	1113	326	1016	418	355	459
Starvation Cap Reductn	0	30	520	0	0	0
Spillback Cap Reductn	170	0	0	297	0	319
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	1.04	0.83	3.31	0.36	0.29

Intersection Summary

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- # 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.



Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 4: Congress Avenue/3rd Street & Broadway Weekday Morning

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	192	0	0	505	226	163	539	10	0	0	0
Future Volume (vph)	29	192	0	0	505	226	163	539	10	0	0	0
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
Ped Bike Factor					0.98			1.00				
Frt					0.958			0.997				
Flt Protected		0.993					0.950					
Satd. Flow (prot)	0	1745	0	0	1527	0	1496	1756	0	0	0	0
Flt Permitted		0.581					0.950					
Satd. Flow (perm)	0	1021	0	0	1527	0	1496	1756	0	0	0	0
Satd. Flow (RTOR)					24			1				
Confl. Peds. (#/hr)			102				31		59			22
Confl. Bikes (#/hr)							1					
Peak Hour Factor	0.25	0.25	0.25	0.91	0.91	0.91	0.85	0.85	0.85	0.25	0.25	0.25
Heavy Vehicles (%)	0%	0%	0%	0%	7%	10%	5%	4%	0%	0%	0%	0%
Parking (#/hr)	0	1	0	0	1	0	0				1	
Shared Lane Traffic (%)												
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		4			8			2				
Permitted Phases	4						2					
Detector Phase	4	4			8		2	2				
Switch Phase												
Minimum Initial (s)	5.0	5.0			10.0		6.0	6.0				
Minimum Split (s)	22.5	22.5			20.0		20.0	20.0				
Total Split (s)	61.0	61.0			61.0		29.0	29.0				
Total Split (%)	67.8%	67.8%			67.8%		32.2%	32.2%				
Maximum Green (s)	56.5	56.5			56.0		24.0	24.0				
Yellow Time (s)	3.5	3.5			3.0		3.0	3.0				
All-Red Time (s)	1.0	1.0			2.0		2.0	2.0				
Lost Time Adjust (s)		0.0			0.0		0.0	0.0				
Total Lost Time (s)		4.5			5.0		5.0	5.0				
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Recall Mode	None	None			C-Min		Min	Min				
Walk Time (s)	7.0	7.0			7.0		7.0	7.0				
Flash Dont Walk (s)	11.0	11.0			8.0		8.0	8.0				
Pedestrian Calls (#/hr)	0	0			0		0	0				
Act Effct Green (s)		56.5			56.0		24.0	24.0				
Actuated g/C Ratio		0.63			0.62		0.27	0.27				
v/c Ratio		1.38			0.84		0.48	1.38				
Control Delay		199.1			18.5		32.6	212.2				
Queue Delay		0.9			2.3		0.2	0.0				
Total Delay		200.0			20.9		32.8	212.2				
LOS		F			C		C	F				
Approach Delay		200.0			20.9			171.1				
Approach LOS		F			C			F				

Intersection Summary

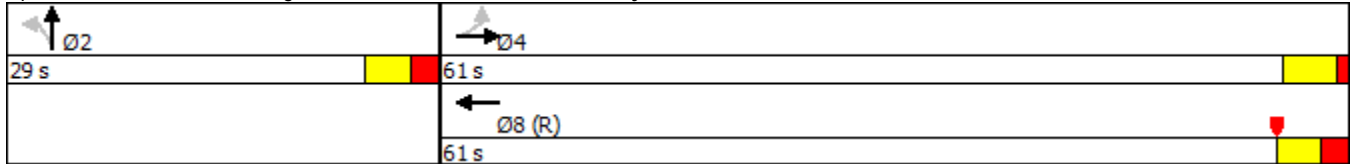
Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 4: Congress Avenue/3rd Street & Broadway

Weekday Morning

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 74 (82%), Referenced to phase 8:WBT, Start of Yellow  
 Natural Cycle: 110  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.38  
 Intersection Signal Delay: 133.4  
 Intersection Capacity Utilization 78.6%  
 Analysis Period (min) 15

Intersection LOS: F  
 ICU Level of Service D

Splits and Phases: 4: Congress Avenue/3rd Street & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
**4: Congress Avenue/3rd Street & Broadway** Weekday Morning

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	→	←	↙	↑
Lane Group	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	884	803	192	646
v/c Ratio	1.38	0.84	0.48	1.38
Control Delay	199.1	18.5	32.6	212.2
Queue Delay	0.9	2.3	0.2	0.0
Total Delay	200.0	20.9	32.8	212.2
Queue Length 50th (ft)	~680	267	92	~496
Queue Length 95th (ft)	70	m296	147	#653
Internal Link Dist (ft)	148	475		238
Turn Bay Length (ft)				
Base Capacity (vph)	640	959	398	469
Starvation Cap Reductn	74	71	0	0
Spillback Cap Reductn	0	41	17	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.56	0.90	0.50	1.38

















**Intersection Summary**

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- ~ 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.

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 5: 4th Street & Broadway

Weekday Morning

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	192	10	121	531	0	0	0	0	43	94	179
Future Volume (vph)	0	192	10	121	531	0	0	0	0	43	94	179
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
Ped Bike Factor		0.98										0.77
Frt		0.993										0.850
Flt Protected					0.991						0.985	
Satd. Flow (prot)	0	1715	0	0	1530	0	0	0	0	0	1586	1516
Flt Permitted					0.639						0.985	
Satd. Flow (perm)	0	1715	0	0	987	0	0	0	0	0	1586	1171
Satd. Flow (RTOR)		8										229
Confl. Peds. (#/hr)			131			10				106		70
Confl. Bikes (#/hr)						1						1
Peak Hour Factor	0.25	0.25	0.25	0.85	0.85	0.85	0.25	0.25	0.25	0.78	0.78	0.78
Heavy Vehicles (%)	0%	0%	0%	2%	7%	0%	0%	0%	0%	0%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	17	0	0	0	0	0	0	0
Parking (#/hr)	0	1	0	0	1	0		1		0	1	
Shared Lane Traffic (%)												
Turn Type		NA		Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases				8						6		6
Detector Phase		4		8	8					6	6	6
Switch Phase												
Minimum Initial (s)		5.0		10.0	10.0					6.0	6.0	6.0
Minimum Split (s)		22.5		20.0	20.0					20.0	20.0	20.0
Total Split (s)		70.0		70.0	70.0					20.0	20.0	20.0
Total Split (%)		77.8%		77.8%	77.8%					22.2%	22.2%	22.2%
Maximum Green (s)		65.5		65.0	65.0					15.0	15.0	15.0
Yellow Time (s)		3.5		3.0	3.0					3.0	3.0	3.0
All-Red Time (s)		1.0		2.0	2.0					2.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0						0.0	0.0
Total Lost Time (s)		4.5			5.0						5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	3.0
Recall Mode		None		C-Min	C-Min					Min	Min	Min
Walk Time (s)		7.0		7.0	7.0					7.0	7.0	7.0
Flash Dont Walk (s)		11.0		8.0	8.0					8.0	8.0	8.0
Pedestrian Calls (#/hr)		0		0	0					0	0	0
Act Effct Green (s)		67.0			66.5						13.5	13.5
Actuated g/C Ratio		0.74			0.74						0.15	0.15
v/c Ratio		0.63			1.05						0.74	0.62
Control Delay		0.5			57.6						55.6	12.9
Queue Delay		1.3			16.8						0.0	0.1
Total Delay		1.8			74.4						55.6	13.0
LOS		A			E						E	B
Approach Delay		1.8			74.4						31.5	
Approach LOS		A			E						C	

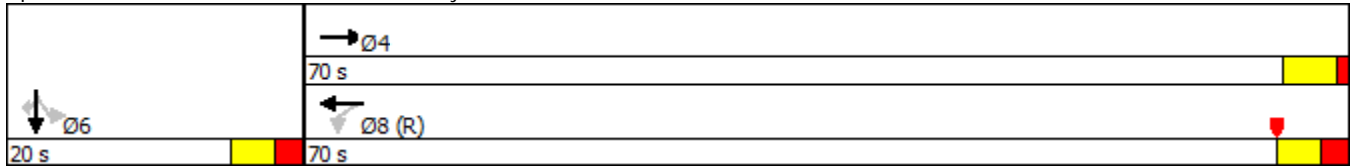
Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 5: 4th Street & Broadway Weekday Morning

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 3 (3%), Referenced to phase 8:WBTL, Start of Yellow  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.05  
 Intersection Signal Delay: 36.0  
 Intersection Capacity Utilization 75.7%  
 Analysis Period (min) 15

Intersection LOS: D  
 ICU Level of Service D

Splits and Phases: 5: 4th Street & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 5: 4th Street & Broadway Weekday Morning

	→	←	↓	↙
Lane Group	EBT	WBT	SBT	SBR
Lane Group Flow (vph)	808	767	176	229
v/c Ratio	0.63	1.05	0.74	0.62
Control Delay	0.5	57.6	55.6	12.9
Queue Delay	1.3	16.8	0.0	0.1
Total Delay	1.8	74.4	55.6	13.0
Queue Length 50th (ft)	8	-491	95	0
Queue Length 95th (ft)	2	#651	139	37
Internal Link Dist (ft)	475	551	132	
Turn Bay Length (ft)				
Base Capacity (vph)	1278	729	264	386
Starvation Cap Reductn	264	0	0	0
Spillback Cap Reductn	0	29	0	6
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.80	1.10	0.67	0.60

Intersection Summary

- ~ 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.

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 6: Hawthorne Street/5th Street & Bellingham Street & Broadway Weekday Morning

Lane Group	EBL	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations										
Traffic Volume (vph)	10	235	10	20	643	26	59	72	97	37
Future Volume (vph)	10	235	10	20	643	26	59	72	97	37
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00					
Frt		0.995			0.995				0.850	
Flt Protected		0.998			0.999			0.978		
Satd. Flow (prot)	0	1745	0	0	1676	0	0	1691	1505	0
Flt Permitted		0.954			0.962			0.978		
Satd. Flow (perm)	0	1668	0	0	1614	0	0	1691	1505	0
Satd. Flow (RTOR)					7				18	
Confl. Peds. (#/hr)										
Confl. Bikes (#/hr)						1				
Peak Hour Factor	0.25	0.25	0.25	0.90	0.90	0.90	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	0%	0%	0%	8%	0%	0%	10%	0%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	20
Parking (#/hr)	0	1	0	0	1	0	0	0	0	0
Shared Lane Traffic (%)										
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	
Protected Phases		4			8			2		
Permitted Phases	4			8			2		2	
Detector Phase	4	4		8	8		2	2	2	
Switch Phase										
Minimum Initial (s)	5.0	5.0		5.0	5.0		6.0	6.0	6.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		16.0	16.0	16.0	
Total Split (s)	74.0	74.0		74.0	74.0		16.0	16.0	16.0	
Total Split (%)	82.2%	82.2%		82.2%	82.2%		17.8%	17.8%	17.8%	
Maximum Green (s)	69.5	69.5		69.5	69.5		13.0	13.0	13.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		2.0	2.0	2.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0	
Total Lost Time (s)		4.5			4.5			3.0	3.0	
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	
Recall Mode	None	None		C-Max	C-Max		Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		6.0	6.0	6.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		7.0	7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	
Act Effct Green (s)		69.5			69.5			13.0	13.0	
Actuated g/C Ratio		0.77			0.77			0.14	0.14	
v/c Ratio		0.79			0.61			0.63	0.67	
Control Delay		10.7			3.7			48.8	48.0	
Queue Delay		2.0			0.0			0.0	168.8	
Total Delay		12.7			3.7			48.8	216.8	
LOS		B			A			D	F	
Approach Delay		12.7			3.7			133.6		
Approach LOS		B			A			F		




Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 6: Hawthorne Street/5th Street & Bellingham Street & Broadway Weekday Morning

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 8:WBTL, Start of Yellow  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.79  
 Intersection Signal Delay: 27.3  
 Intersection Capacity Utilization 80.4%  
 Analysis Period (min) 15

Intersection LOS: C  
 ICU Level of Service D

Splits and Phases: 6: Hawthorne Street/5th Street & Bellingham Street & Broadway

 16 s	 74 s
	 74 s



Queues 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 6: Hawthorne Street/5th Street & Bellingham Street & Broadway Weekday Morning

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	→	←	↑	↗
Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	1020	765	153	156
v/c Ratio	0.79	0.61	0.63	0.67
Control Delay	10.7	3.7	48.8	48.0
Queue Delay	2.0	0.0	0.0	168.8
Total Delay	12.7	3.7	48.8	216.8
Queue Length 50th (ft)	211	104	83	75
Queue Length 95th (ft)	55	m123	140	#146
Internal Link Dist (ft)	551	19	35	
Turn Bay Length (ft)				
Base Capacity (vph)	1288	1247	244	232
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	144	0	0	220
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.89	0.61	0.63	13.00











Intersection Summary

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- # 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.

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 7: Broadway & Washington Avenue

Weekday Morning

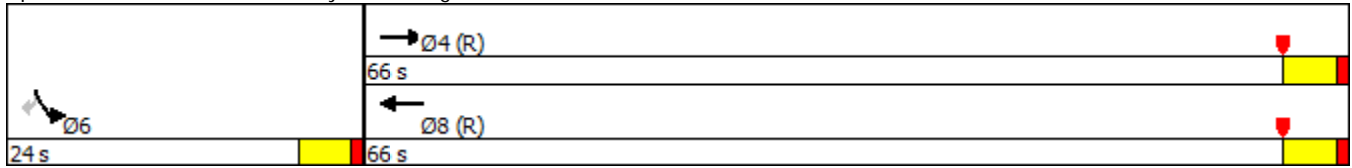
						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	332	274	0	18	415
Future Volume (vph)	0	332	274	0	18	415
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						0.98
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	1814	1757	0	1428	1502
Flt Permitted					0.950	
Satd. Flow (perm)	0	1814	1757	0	1428	1469
Satd. Flow (RTOR)						131
Confl. Peds. (#/hr)	83					
Confl. Bikes (#/hr)						1
Peak Hour Factor	0.25	0.25	0.25	0.25	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	8%	0%
Bus Blockages (#/hr)	0	0	0	0	19	0
Parking (#/hr)	0	1	1	0	1	0
Shared Lane Traffic (%)						
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		5.0	5.0		5.0	5.0
Minimum Split (s)		22.5	22.5		22.5	22.5
Total Split (s)		66.0	66.0		24.0	24.0
Total Split (%)		73.3%	73.3%		26.7%	26.7%
Maximum Green (s)		61.5	61.5		19.5	19.5
Yellow Time (s)		3.5	3.5		3.5	3.5
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		C-Max	C-Max		Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		61.5	61.5		19.5	19.5
Actuated g/C Ratio		0.68	0.68		0.22	0.22
v/c Ratio		1.07	0.91		0.06	1.10
Control Delay		58.6	25.7		28.8	99.2
Queue Delay		0.0	36.5		0.0	10.6
Total Delay		58.6	62.2		28.8	109.8
LOS		E	E		C	F
Approach Delay		58.6	62.2		106.4	
Approach LOS		E	E		F	

Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 7: Broadway & Washington Avenue Weekday Morning

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow  
 Natural Cycle: 140  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.10  
 Intersection Signal Delay: 67.9 Intersection LOS: E  
 Intersection Capacity Utilization 47.6% ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 7: Broadway & Washington Avenue



Queues 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 7: Broadway & Washington Avenue Weekday Morning

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	→	←	↘	↙
Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1328	1096	20	461
v/c Ratio	1.07	0.91	0.06	1.10
Control Delay	58.6	25.7	28.8	99.2
Queue Delay	0.0	36.5	0.0	10.6
Total Delay	58.6	62.2	28.8	109.8
Queue Length 50th (ft)	~843	456	9	~236
Queue Length 95th (ft)	55	71	28	#426
Internal Link Dist (ft)	19	80	10	
Turn Bay Length (ft)				
Base Capacity (vph)	1239	1200	309	420
Starvation Cap Reductn	0	182	0	0
Spillback Cap Reductn	0	0	0	227
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.07	1.08	0.06	2.39

Intersection Summary

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- ~ 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.

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 9: Washington Avenue & Chestnut Street Weekday Morning

	→	↗	↖	←	↘	↙
Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations			↖	↗		
Traffic Volume (vph)	0	0	400	279	0	0
Future Volume (vph)	0	0	400	279	0	0
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected			0.950	0.990		
Satd. Flow (prot)	0	0	1517	1652	0	0
Flt Permitted			0.950	0.990		
Satd. Flow (perm)	0	0	1517	1652	0	0
Confl. Peds. (#/hr)						22
Peak Hour Factor	0.25	0.25	0.92	0.92	0.25	0.25
Heavy Vehicles (%)	0%	0%	13%	7%	0%	0%
Parking (#/hr)	1	0			0	0
Shared Lane Traffic (%)			17%			
Sign Control	Free			Free	Free	

Intersection Summary

Control Type: Unsignalized  
 Intersection Capacity Utilization 33.6% ICU Level of Service A  
 Analysis Period (min) 15

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 10: Fay Square / City Hall Avenue/6th Street & Washington Avenue Weekday Morning

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	161	354	0	215	0	163	1	10	111
Future Volume (vph)	0	0	0	161	354	0	215	0	163	1	10	111
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
Ped Bike Factor								0.99				
Frt								0.942			0.877	
Flt Protected					0.985			0.972				
Satd. Flow (prot)	0	0	0	0	2010	0	0	1596	0	0	1500	0
Flt Permitted					0.985			0.762			0.998	
Satd. Flow (perm)	0	0	0	0	2010	0	0	1252	0	0	1497	0
Satd. Flow (RTOR)								60			148	
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.75	0.75	0.89	0.89	0.92	0.91	0.92	0.91	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	8%	2%	8%	2%	8%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type				Perm	NA		Perm	NA		Perm	NA	
Protected Phases					8			2			6	
Permitted Phases				8			2			6		
Detector Phase				8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)				22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)				41.0	41.0		49.0	49.0		49.0	49.0	
Total Split (%)				45.6%	45.6%		54.4%	54.4%		54.4%	54.4%	
Maximum Green (s)				36.5	36.5		44.5	44.5		44.5	44.5	
Yellow Time (s)				3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)				1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)					0.0			0.0			0.0	
Total Lost Time (s)					4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode				None	None		Min	Min		Min	Min	
Walk Time (s)				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	
Pedestrian Calls (#/hr)				0	0		0	0		0	0	
Act Effect Green (s)					23.1			24.9			24.9	
Actuated g/C Ratio					0.40			0.43			0.43	
v/c Ratio					0.73			0.73			0.22	
Control Delay					22.8			20.9			3.8	
Queue Delay					0.0			0.0			0.0	
Total Delay					22.8			20.9			3.8	
LOS					C			C			A	
Approach Delay					22.8			20.9			3.8	
Approach LOS					C			C			A	

Intersection Summary

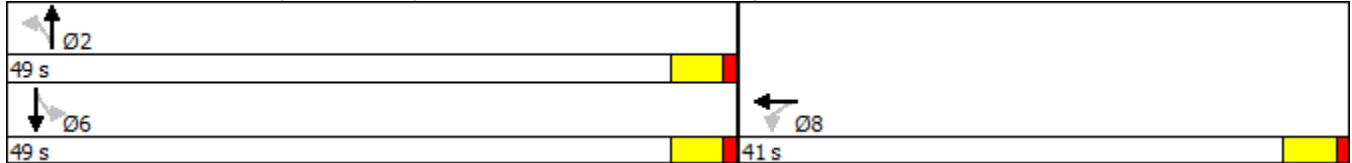
Cycle Length: 90  
 Actuated Cycle Length: 58.3

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 10: Fay Square / City Hall Avenue/6th Street & Washington Avenue Weekday Morning

Natural Cycle: 45  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.73  
 Intersection Signal Delay: 19.4  
 Intersection Capacity Utilization 68.1%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service C

Splits and Phases: 10: Fay Square / City Hall Avenue/6th Street & Washington Avenue




















Queues 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 10: Fay Square / City Hall Avenue/6th Street & Washington Avenue Weekday Morning

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	←	↑	↓	
Lane Group	WBT	NBT	SBT	
Lane Group Flow (vph)	579	415	162	
v/c Ratio	0.73	0.73	0.22	
Control Delay	22.8	20.9	3.8	
Queue Delay	0.0	0.0	0.0	
Total Delay	22.8	20.9	3.8	
Queue Length 50th (ft)	149	88	2	
Queue Length 95th (ft)	385	247	21	
Internal Link Dist (ft)	824	258	326	
Turn Bay Length (ft)				
Base Capacity (vph)	1377	998	1210	
Starvation Cap Reductn	0	39	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.42	0.43	0.13	
Intersection Summary				



2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 25: Marlborough Street/Fay Square / City Hall Avenue & Broadway Weekday Morning

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	221	279	127	10	254	177	0	0	0	10	136	15
Future Volume (vph)	221	279	127	10	254	177	0	0	0	10	136	15
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
Ped Bike Factor		0.99			0.96							
Frt		0.953			0.946						0.987	
Flt Protected	0.950				0.999						0.997	
Satd. Flow (prot)	1671	1497	0	0	1718	0	0	0	0	0	1886	0
Flt Permitted	0.404				0.988						0.997	
Satd. Flow (perm)	711	1497	0	0	1699	0	0	0	0	0	1886	0
Satd. Flow (RTOR)		37			54						7	
Confl. Peds. (#/hr)			9			35			57			
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.81	0.81	0.81	0.88	0.88	0.88	0.38	0.38	0.38	0.25	0.25	0.25
Heavy Vehicles (%)	8%	9%	2%	0%	0%	5%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0
Parking (#/hr)		1	0	0	0	2	0	1		0	2	0
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8					6	6	
Switch Phase												
Minimum Initial (s)	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	
Total Split (s)	50.0	50.0		50.0	50.0					40.0	40.0	
Total Split (%)	55.6%	55.6%		55.6%	55.6%					44.4%	44.4%	
Maximum Green (s)	45.5	45.5		45.5	45.5					35.5	35.5	
Yellow Time (s)	3.5	3.5		3.5	3.5					3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0					1.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0						0.0	
Total Lost Time (s)	4.5	4.5			4.5						4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0					3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max					Max	Max	
Walk Time (s)	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	
Pedestrian Calls (#/hr)	0	0		0	0					0	0	
Act Effct Green (s)	45.5	45.5			45.5						35.5	
Actuated g/C Ratio	0.51	0.51			0.51						0.39	
v/c Ratio	0.76	0.65			0.57						0.86	
Control Delay	25.5	14.1			16.6						38.4	
Queue Delay	0.0	0.5			0.0						50.0	
Total Delay	25.5	14.6			16.6						88.4	
LOS	C	B			B						F	
Approach Delay		18.5			16.6						88.4	
Approach LOS		B			B						F	

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 25: Marlborough Street/Fay Square / City Hall Avenue & Broadway

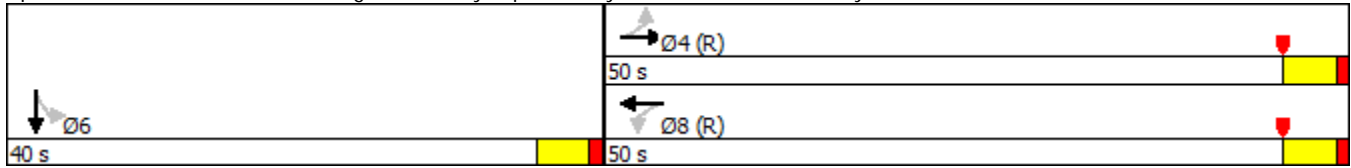
Weekday Morning

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.86  
 Intersection Signal Delay: 41.5  
 Intersection Capacity Utilization 75.2%  
 Analysis Period (min) 15





Intersection LOS: D  
 ICU Level of Service D

Splits and Phases: 25: Marlborough Street/Fay Square / City Hall Avenue & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 25: Marlborough Street/Fay Square / City Hall Avenue & Broadway Weekday Morning

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Lane Group	EBL	EBT	WBT	SBT
Lane Group Flow (vph)	273	501	501	644
v/c Ratio	0.76	0.65	0.57	0.86
Control Delay	25.5	14.1	16.6	38.4
Queue Delay	0.0	0.5	0.0	50.0
Total Delay	25.5	14.6	16.6	88.4
Queue Length 50th (ft)	87	121	167	325
Queue Length 95th (ft)	m98	m125	252	84
Internal Link Dist (ft)		78	1304	258
Turn Bay Length (ft)				
Base Capacity (vph)	359	775	885	748
Starvation Cap Reductn	0	65	0	213
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.76	0.71	0.57	1.20

Intersection Summary

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

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 30: Park Street & Broadway Weekday Morning

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖		
Traffic Volume (vph)	183	5	0	529	0	0
Future Volume (vph)	183	5	0	529	0	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996					
Flt Protected						
Satd. Flow (prot)	2131	0	0	1703	0	0
Flt Permitted						
Satd. Flow (perm)	2131	0	0	1703	0	0
Peak Hour Factor	0.84	0.84	0.85	0.85	0.25	0.25
Heavy Vehicles (%)	0%	24%	0%	19%	0%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary

Control Type: Unsignalized  
 Intersection Capacity Utilization 31.2% ICU Level of Service A  
 Analysis Period (min) 15

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 1: Tremont Street & Williams Street & Broadway Weekday Evening

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	16	68	89	5	274	5	53	89	11	26	441	144
Future Volume (vph)	16	68	89	5	274	5	53	89	11	26	441	144
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
Ped Bike Factor											0.99	
Frt		0.929					0.971				0.969	
Flt Protected		0.996					0.968				0.997	
Satd. Flow (prot)	0	1808	0	0	0	0	1635	0	0	0	1959	0
Flt Permitted		0.942					0.688				0.831	
Satd. Flow (perm)	0	1710	0	0	0	0	1162	0	0	0	1633	0
Satd. Flow (RTOR)		2					16				17	
Confl. Bikes (#/hr)												2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.78	0.78	0.78	0.78	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	20%	5%	0%	5%	0%	2%	1%	0%	0%	7%	3%
Parking (#/hr)					0	0	2	0				
Shared Lane Traffic (%)												
Turn Type	Perm	NA			Perm	Perm	NA		Perm	Perm	NA	
Protected Phases		3					3				1	
Permitted Phases	3				3	3			1	1		
Detector Phase	3	3			3	3	3		1	1	1	
Switch Phase												
Minimum Initial (s)	8.0	8.0			8.0	8.0	8.0		10.0	10.0	10.0	
Minimum Split (s)	15.0	15.0			15.0	15.0	15.0		17.0	17.0	17.0	
Total Split (s)	38.0	38.0			38.0	38.0	38.0		33.0	33.0	33.0	
Total Split (%)	42.2%	42.2%			42.2%	42.2%	42.2%		36.7%	36.7%	36.7%	
Maximum Green (s)	31.0	31.0			31.0	31.0	31.0		26.0	26.0	26.0	
Yellow Time (s)	4.0	4.0			4.0	4.0	4.0		4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0			3.0	3.0	3.0		3.0	3.0	3.0	
Lost Time Adjust (s)		0.0					0.0				0.0	
Total Lost Time (s)		7.0					7.0				7.0	
Lead/Lag									Lead	Lead	Lead	
Lead-Lag Optimize?									Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0		2.0	2.0	2.0	
Recall Mode	C-Max	C-Max			C-Max	C-Max	C-Max		None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		50.0					50.0				26.0	
Actuated g/C Ratio		0.56					0.56				0.29	
v/c Ratio		0.20					0.83				1.39	
Control Delay		10.6					26.7				214.0	
Queue Delay		0.0					0.0				0.0	
Total Delay		10.6					26.7				214.0	
LOS		B					C				F	
Approach Delay		10.6					26.7				214.0	
Approach LOS		B					C				F	

Intersection Summary

Cycle Length: 90

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 1: Tremont Street & Williams Street & Broadway

Weekday Evening

Lane Group	SBL	SBT	SBR	SBR2	Ø2
Lane Configurations		↔			
Traffic Volume (vph)	21	426	5	21	
Future Volume (vph)	21	426	5	21	
Lane Util. Factor	1.00	1.00	1.00	1.00	
Ped Bike Factor		1.00			
Frt		0.993			
Flt Protected		0.998			
Satd. Flow (prot)	0	2031	0	0	
Flt Permitted		0.869			
Satd. Flow (perm)	0	1768	0	0	
Satd. Flow (RTOR)		3			
Confl. Bikes (#/hr)			2		
Peak Hour Factor	0.82	0.82	0.82	0.82	
Heavy Vehicles (%)	0%	5%	0%	10%	
Parking (#/hr)					
Shared Lane Traffic (%)					
Turn Type	Perm	NA			
Protected Phases		1			2
Permitted Phases	1				
Detector Phase	1	1			
Switch Phase					
Minimum Initial (s)	10.0	10.0			7.0
Minimum Split (s)	17.0	17.0			19.0
Total Split (s)	33.0	33.0			19.0
Total Split (%)	36.7%	36.7%			21%
Maximum Green (s)	26.0	26.0			16.0
Yellow Time (s)	4.0	4.0			2.0
All-Red Time (s)	3.0	3.0			1.0
Lost Time Adjust (s)		0.0			
Total Lost Time (s)		7.0			
Lead/Lag	Lead	Lead			Lag
Lead-Lag Optimize?	Yes	Yes			Yes
Vehicle Extension (s)	2.0	2.0			2.0
Recall Mode	None	None			None
Walk Time (s)					7.0
Flash Dont Walk (s)					9.0
Pedestrian Calls (#/hr)					0
Act Effct Green (s)		26.0			
Actuated g/C Ratio		0.29			
v/c Ratio		1.13			
Control Delay		112.1			
Queue Delay		0.0			
Total Delay		112.1			
LOS		F			
Approach Delay		112.1			
Approach LOS		F			

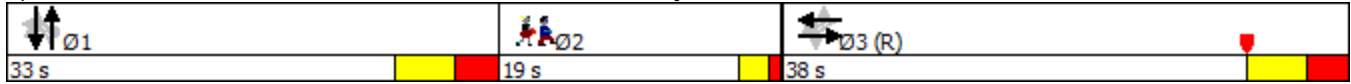
Intersection Summary

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 1: Tremont Street & Williams Street & Broadway Weekday Evening

Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 3:EBWB, Start of Yellow, Master Intersection  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.39  
 Intersection Signal Delay: 113.4  
 Intersection Capacity Utilization 97.3%  
 Analysis Period (min) 15

Intersection LOS: F  
 ICU Level of Service F

Splits and Phases: 1: Tremont Street & Williams Street & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 1: Tremont Street & Williams Street & Broadway Weekday Evening

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	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	193	539	669	578
v/c Ratio	0.20	0.83	1.39	1.13
Control Delay	10.6	26.7	214.0	112.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.6	26.7	214.0	112.1
Queue Length 50th (ft)	51	173	~508	~385
Queue Length 95th (ft)	87	220	#722	#508
Internal Link Dist (ft)	104	51	615	125
Turn Bay Length (ft)				
Base Capacity (vph)	950	652	483	512
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	0.83	1.39	1.13

















Intersection Summary

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- ~ 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.



2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 2: 2nd Street & Broadway Weekday Evening

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	163	50	143	321	110	16	21	10	41	148	122
Future Volume (vph)	21	163	50	143	321	110	16	21	10	41	148	122
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
Ped Bike Factor												
Frt		0.971			0.974			0.972			0.947	
Flt Protected		0.996			0.988			0.983			0.993	
Satd. Flow (prot)	0	1754	0	0	1729	0	0	2012	0	0	1508	0
Flt Permitted		0.996			0.988			0.983			0.993	
Satd. Flow (perm)	0	1754	0	0	1729	0	0	2012	0	0	1508	0
Confl. Peds. (#/hr)			50				26		160			27
Peak Hour Factor	0.25	0.25	0.25	0.76	0.76	0.76	0.69	0.69	0.69	0.83	0.83	0.83
Heavy Vehicles (%)	0%	0%	0%	0%	1%	2%	0%	5%	0%	0%	2%	4%
Parking (#/hr)	0	1	0	0	1	0				0	1	0
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Control Type: Unsignalized  
 Intersection Capacity Utilization 75.4% ICU Level of Service D  
 Analysis Period (min) 15

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 3: Winnisimmet Street & Cross Street/ Everett Avenue & Broadway Weekday Evening

	→	↘	↙	←	↖	↓	↗	↘	↙	↗
Lane Group	EBT	EBR	WBL2	WBT	SBL	SBT	SBR2	NEL2	NEL	NER
Lane Configurations	↗		↙	↗		↗	↗		↘	
Traffic Volume (vph)	204	10	200	279	98	349	127	5	0	5
Future Volume (vph)	204	10	200	279	98	349	127	5	0	5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00						0.47		0.99	
Frt	0.994						0.850		0.932	
Flt Protected			0.950			0.989			0.976	
Satd. Flow (prot)	1746	0	1584	1684	0	1669	1454	0	1734	0
Flt Permitted			0.194			0.989			0.976	
Satd. Flow (perm)	1746	0	323	1684	0	1669	676	0	1734	0
Satd. Flow (RTOR)							140			
Confl. Peds. (#/hr)							208			
Confl. Bikes (#/hr)		2					1			1
Peak Hour Factor	0.25	0.25	0.86	0.86	0.91	0.91	0.91	0.25	0.25	0.25
Heavy Vehicles (%)	0%	0%	6%	1%	0%	1%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	8	0	0	0	0	0	0
Parking (#/hr)	1	0	0	1	0	1	0	0	1	0
Shared Lane Traffic (%)										
Turn Type	NA		Perm	NA	Perm	NA	Perm	Perm	Prot	
Protected Phases	4			8		6!			2!	
Permitted Phases			8		6		6	2		
Detector Phase	4		8	8	6	6	6	2	2	
Switch Phase										
Minimum Initial (s)	5.0		10.0	10.0	6.0	6.0	6.0	5.0	5.0	
Minimum Split (s)	22.5		20.0	20.0	20.0	20.0	20.0	22.5	22.5	
Total Split (s)	62.0		62.0	62.0	28.0	28.0	28.0	28.0	28.0	
Total Split (%)	68.9%		68.9%	68.9%	31.1%	31.1%	31.1%	31.1%	31.1%	
Maximum Green (s)	57.5		57.0	57.0	23.0	23.0	23.0	23.5	23.5	
Yellow Time (s)	3.5		3.0	3.0	3.0	3.0	3.0	3.5	3.5	
All-Red Time (s)	1.0		2.0	2.0	2.0	2.0	2.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0		0.0	0.0		0.0	
Total Lost Time (s)	4.5		5.0	5.0		5.0	5.0		4.5	
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		C-Min	C-Min	Min	Min	Min	None	None	
Walk Time (s)	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0		8.0	8.0	8.0	8.0	8.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	0	0	0	0	
Act Effct Green (s)	57.5		57.0	57.0		23.0	23.0		23.5	
Actuated g/C Ratio	0.64		0.63	0.63		0.26	0.26		0.26	
v/c Ratio	0.77		1.14	0.30		1.15	0.51		0.09	
Control Delay	17.3		124.7	8.5		126.1	12.2		25.9	
Queue Delay	0.4		0.0	1.9		27.7	0.0		5.4	
Total Delay	17.6		124.7	10.3		153.8	12.2		31.3	
LOS	B		F	B		F	B		C	
Approach Delay	17.6			58.2		122.4			31.3	
Approach LOS	B			E		F			C	

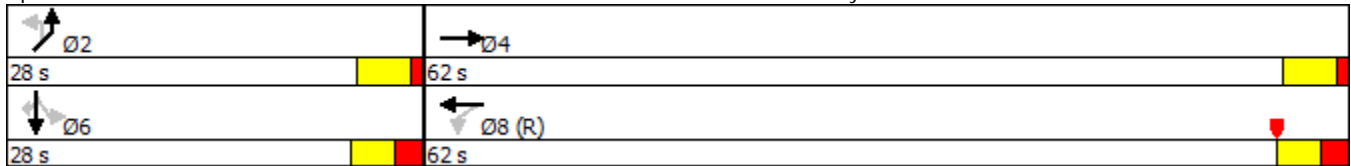
2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 3: Winnisimmet Street & Cross Street/Everett Avenue & Broadway Weekday Evening

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 5 (6%), Referenced to phase 8:WBTL, Start of Yellow  
 Natural Cycle: 130  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.15  
 Intersection Signal Delay: 60.5  
 Intersection Capacity Utilization 83.4%  
 Analysis Period (min) 15  
 ! Phase conflict between lane groups.

Intersection LOS: E  
 ICU Level of Service E

Splits and Phases: 3: Winnisimmet Street & Cross Street/Everett Avenue & Broadway



















Queues 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 3: Winnisimmet Street & Cross Street/Everett Avenue & Broadway Weekday Evening

	→	↙	←	↓	↘	↗
Lane Group	EBT	WBL2	WBT	SBT	SBR2	NEL
Lane Group Flow (vph)	856	233	324	492	140	40
v/c Ratio	0.77	1.14	0.30	1.15	0.51	0.09
Control Delay	17.3	124.7	8.5	126.1	12.2	25.9
Queue Delay	0.4	0.0	1.9	27.7	0.0	5.4
Total Delay	17.6	124.7	10.3	153.8	12.2	31.3
Queue Length 50th (ft)	343	~158	63	~333	0	17
Queue Length 95th (ft)	58	#288	91	#523	54	12
Internal Link Dist (ft)	245		148	301		296
Turn Bay Length (ft)						
Base Capacity (vph)	1115	204	1066	426	276	452
Starvation Cap Reductn	0	0	575	0	0	0
Spillback Cap Reductn	42	0	0	344	0	367
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.80	1.14	0.66	6.00	0.51	0.47

Intersection Summary

- ~ 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.

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 4: Congress Avenue/3rd Street & Broadway Weekday Evening

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	265	0	0	336	215	147	578	10	0	0	0
Future Volume (vph)	37	265	0	0	336	215	147	578	10	0	0	0
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
Ped Bike Factor					0.96			0.99				
Frt					0.947			0.997				
Flt Protected		0.994					0.950					
Satd. Flow (prot)	0	1747	0	0	1498	0	1540	1779	0	0	0	0
Flt Permitted		0.738					0.950					
Satd. Flow (perm)	0	1297	0	0	1498	0	1540	1779	0	0	0	0
Satd. Flow (RTOR)					3			1				
Confl. Peds. (#/hr)			112			52			225			84
Confl. Bikes (#/hr)			3			3						2
Peak Hour Factor	0.25	0.25	0.25	0.90	0.90	0.90	0.95	0.95	0.95	0.25	0.25	0.25
Heavy Vehicles (%)	0%	0%	0%	0%	5%	9%	2%	2%	0%	0%	0%	0%
Parking (#/hr)	0	1	0	0	1	0	0				1	
Shared Lane Traffic (%)												
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		4			8			2				
Permitted Phases	4						2					
Detector Phase	4	4			8		2	2				
Switch Phase												
Minimum Initial (s)	5.0	5.0			10.0		6.0	6.0				
Minimum Split (s)	22.5	22.5			20.0		20.0	20.0				
Total Split (s)	63.0	63.0			63.0		27.0	27.0				
Total Split (%)	70.0%	70.0%			70.0%		30.0%	30.0%				
Maximum Green (s)	58.5	58.5			58.0		22.0	22.0				
Yellow Time (s)	3.5	3.5			3.0		3.0	3.0				
All-Red Time (s)	1.0	1.0			2.0		2.0	2.0				
Lost Time Adjust (s)		0.0			0.0		0.0	0.0				
Total Lost Time (s)		4.5			5.0		5.0	5.0				
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Recall Mode	None	None			C-Min		Min	Min				
Walk Time (s)	7.0	7.0			7.0		7.0	7.0				
Flash Dont Walk (s)	11.0	11.0			8.0		8.0	8.0				
Pedestrian Calls (#/hr)	0	0			0		0	0				
Act Effct Green (s)		58.5			58.0		22.0	22.0				
Actuated g/C Ratio		0.65			0.64		0.24	0.24				
v/c Ratio		1.43			0.63		0.41	1.42				
Control Delay		217.7			8.5		32.6	232.7				
Queue Delay		0.0			1.3		0.0	0.0				
Total Delay		217.7			9.9		32.6	232.7				
LOS		F			A		C	F				
Approach Delay		217.7			9.9			192.6				
Approach LOS		F			A			F				

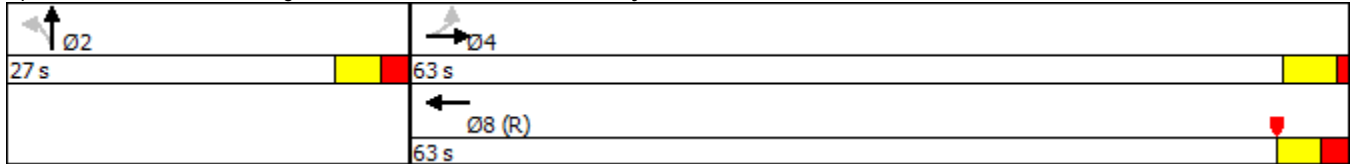
Intersection Summary

Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 4: Congress Avenue/3rd Street & Broadway Weekday Evening

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 8:WBT, Start of Yellow  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.43  
 Intersection Signal Delay: 161.2  
 Intersection Capacity Utilization 84.2%  
 Analysis Period (min) 15

Intersection LOS: F  
 ICU Level of Service E

Splits and Phases: 4: Congress Avenue/3rd Street & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
**4: Congress Avenue/3rd Street & Broadway** Weekday Evening

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	→	←	↙	↑
Lane Group	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	1208	612	155	619
v/c Ratio	1.43	0.63	0.41	1.42
Control Delay	217.7	8.5	32.6	232.7
Queue Delay	0.0	1.3	0.0	0.0
Total Delay	217.7	9.9	32.6	232.7
Queue Length 50th (ft)	~957	113	74	~484
Queue Length 95th (ft)	70	m111	133	#693
Internal Link Dist (ft)	148	475		238
Turn Bay Length (ft)				
Base Capacity (vph)	843	966	376	435
Starvation Cap Reductn	0	132	0	0
Spillback Cap Reductn	0	176	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.43	0.77	0.41	1.42

















**Intersection Summary**

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- ~ 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.

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 5: 4th Street & Broadway

Weekday Evening

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	265	10	126	389	0	0	0	0	82	186	184
Future Volume (vph)	0	265	10	126	389	0	0	0	0	82	186	184
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
Ped Bike Factor		0.99										0.55
Frt		0.995										0.850
Flt Protected					0.988						0.985	
Satd. Flow (prot)	0	1729	0	0	1533	0	0	0	0	0	1597	1546
Flt Permitted					0.302						0.985	
Satd. Flow (perm)	0	1729	0	0	469	0	0	0	0	0	1597	854
Satd. Flow (RTOR)		5										216
Confl. Peds. (#/hr)			119			20				219		145
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.25	0.25	0.25	0.89	0.89	0.89	0.25	0.25	0.25	0.85	0.85	0.85
Heavy Vehicles (%)	0%	0%	0%	1%	7%	0%	0%	0%	0%	0%	2%	1%
Bus Blockages (#/hr)	0	0	0	0	17	0	0	0	0	0	0	0
Parking (#/hr)	0	1	0	0	1	0		1		0	1	
Shared Lane Traffic (%)												
Turn Type		NA		Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases				8						6		6
Detector Phase		4		8	8					6	6	6
Switch Phase												
Minimum Initial (s)		5.0		10.0	10.0					6.0	6.0	6.0
Minimum Split (s)		22.5		20.0	20.0					20.0	20.0	20.0
Total Split (s)		68.0		68.0	68.0					22.0	22.0	22.0
Total Split (%)		75.6%		75.6%	75.6%					24.4%	24.4%	24.4%
Maximum Green (s)		63.5		63.0	63.0					17.0	17.0	17.0
Yellow Time (s)		3.5		3.0	3.0					3.0	3.0	3.0
All-Red Time (s)		1.0		2.0	2.0					2.0	2.0	2.0
Lost Time Adjust (s)		0.0			0.0						0.0	0.0
Total Lost Time (s)		4.5			5.0						5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0		3.0	3.0					3.0	3.0	3.0
Recall Mode		None		C-Min	C-Min					Min	Min	Min
Walk Time (s)		7.0		7.0	7.0					7.0	7.0	7.0
Flash Dont Walk (s)		11.0		8.0	8.0					8.0	8.0	8.0
Pedestrian Calls (#/hr)		0		0	0					0	0	0
Act Effct Green (s)		63.5			63.0						17.0	17.0
Actuated g/C Ratio		0.71			0.70						0.19	0.19
v/c Ratio		0.90			1.77						1.05	0.64
Control Delay		10.8			378.6						102.4	14.6
Queue Delay		47.7			0.0						23.9	0.0
Total Delay		58.5			378.6						126.3	14.6
LOS		E			F						F	B
Approach Delay		58.5			378.6						80.8	
Approach LOS		E			F						F	



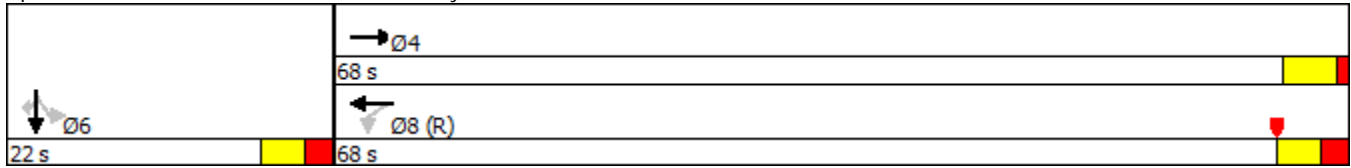
Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 5: 4th Street & Broadway Weekday Evening

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 8:WBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.77  
 Intersection Signal Delay: 147.7  
 Intersection Capacity Utilization 75.5%  
 Analysis Period (min) 15

Intersection LOS: F  
 ICU Level of Service D

Splits and Phases: 5: 4th Street & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 5: 4th Street & Broadway Weekday Evening

	→	←	↓	↙
Lane Group	EBT	WBT	SBT	SBR
Lane Group Flow (vph)	1100	579	315	216
v/c Ratio	0.90	1.77	1.05	0.64
Control Delay	10.8	378.6	102.4	14.6
Queue Delay	47.7	0.0	23.9	0.0
Total Delay	58.5	378.6	126.3	14.6
Queue Length 50th (ft)	180	-477	-196	0
Queue Length 95th (ft)	58	#658	#328	58
Internal Link Dist (ft)	475	551	132	
Turn Bay Length (ft)				
Base Capacity (vph)	1221	328	301	336
Starvation Cap Reductn	144	0	0	0
Spillback Cap Reductn	415	0	99	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.36	1.77	1.56	0.64











Intersection Summary

- ~ 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.

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)

6: Broadway

Weekday Evening

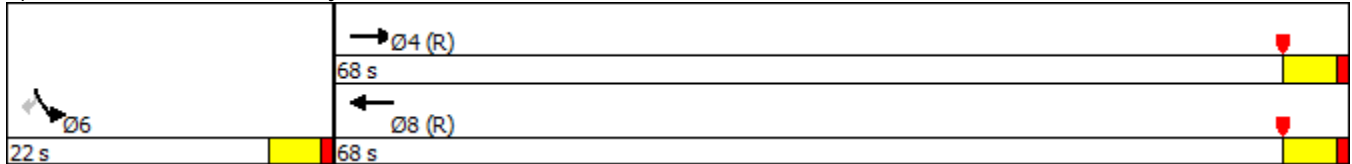
						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	592	252	0	21	286
Future Volume (vph)	0	592	252	0	21	286
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						0.98
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	1824	1757	0	1679	1302
Flt Permitted					0.950	
Satd. Flow (perm)	0	1824	1757	0	1679	1273
Satd. Flow (RTOR)						167
Confl. Bikes (#/hr)						1
Peak Hour Factor	0.25	0.25	0.25	0.25	0.88	0.88
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%
Bus Blockages (#/hr)	0	0	0	0	0	19
Parking (#/hr)	0	0	1	0	0	1
Shared Lane Traffic (%)						
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		5.0	5.0		5.0	5.0
Minimum Split (s)		22.5	22.5		22.5	22.5
Total Split (s)		68.0	68.0		22.0	22.0
Total Split (%)		75.6%	75.6%		24.4%	24.4%
Maximum Green (s)		63.5	63.5		17.5	17.5
Yellow Time (s)		3.5	3.5		3.5	3.5
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		C-Max	C-Max		Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		63.5	63.5		17.5	17.5
Actuated g/C Ratio		0.71	0.71		0.19	0.19
v/c Ratio		1.84	0.81		0.07	0.85
Control Delay		399.8	16.1		30.4	39.0
Queue Delay		0.0	50.1		0.0	13.4
Total Delay		399.8	66.2		30.4	52.4
LOS		F	E		C	D
Approach Delay		399.8	66.2		50.9	
Approach LOS		F	E		D	

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.84  
 Intersection Signal Delay: 276.9  
 Intersection Capacity Utilization 42.8%  
 Analysis Period (min) 15

Intersection LOS: F  
 ICU Level of Service A

Splits and Phases: 6: Broadway



Queues  
6: Broadway

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)















Weekday Evening

	→	←	↘	↙
Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2368	1008	24	325
v/c Ratio	1.84	0.81	0.07	0.85
Control Delay	399.8	16.1	30.4	39.0
Queue Delay	0.0	50.1	0.0	13.4
Total Delay	399.8	66.2	30.4	52.4
Queue Length 50th (ft)	~2081	337	11	89
Queue Length 95th (ft)	216	59	32	#229
Internal Link Dist (ft)	19	80	10	
Turn Bay Length (ft)				
Base Capacity (vph)	1286	1239	326	382
Starvation Cap Reductn	0	226	0	0
Spillback Cap Reductn	11	498	0	47
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.86	1.36	0.07	0.97

Intersection Summary

- ~ 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.

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 7: Hawthorne Street/5th Street & Bellingham Street & Broadway Weekday Evening

										
Lane Group	EBL	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations										
Traffic Volume (vph)	10	347	10	20	487	31	58	54	245	42
Future Volume (vph)	10	347	10	20	487	31	58	54	245	42
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00				0.97	
Frt		0.996			0.992				0.850	
Flt Protected		0.999			0.998			0.975		
Satd. Flow (prot)	0	1758	0	0	1701	0	0	1719	1539	0
Flt Permitted		0.973			0.919			0.975		
Satd. Flow (perm)	0	1712	0	0	1567	0	0	1719	1500	0
Satd. Flow (RTOR)					8				18	
Confl. Bikes (#/hr)						1				3
Peak Hour Factor	0.25	0.25	0.25	0.88	0.88	0.88	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	6%	0%	0%	6%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	20
Parking (#/hr)	0	0	0	0	1	0	0	1	0	0
Shared Lane Traffic (%)										
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	
Protected Phases		4			8			2		
Permitted Phases	4			8			2		2	
Detector Phase	4	4		8	8		2	2	2	
Switch Phase										
Minimum Initial (s)	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	
Total Split (s)	67.0	67.0		67.0	67.0		23.0	23.0	23.0	
Total Split (%)	74.4%	74.4%		74.4%	74.4%		25.6%	25.6%	25.6%	
Maximum Green (s)	62.5	62.5		62.5	62.5		18.5	18.5	18.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0	
Total Lost Time (s)		4.5			4.5			4.5	4.5	
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	
Recall Mode	None	None		C-Max	C-Max		Max	Max	Max	
Walk Time (s)	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	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	
Act Effct Green (s)		62.5			62.5			18.5	18.5	
Actuated g/C Ratio		0.69			0.69			0.21	0.21	
v/c Ratio		1.24			0.56			0.33	0.94	
Control Delay		134.1			11.2			33.6	71.9	
Queue Delay		3.0			0.0			0.0	2.3	
Total Delay		137.1			11.2			33.6	74.2	
LOS		F			B			C	E	
Approach Delay		137.1			11.2			62.8		
Approach LOS		F			B			E		

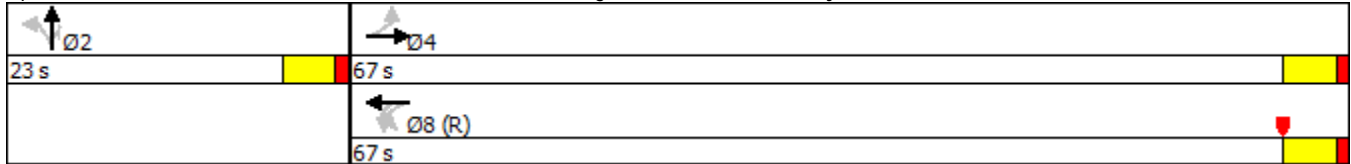
Intersection Summary

Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 7: Hawthorne Street/5th Street & Bellingham Street & Broadway Weekday Evening

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Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 44 (49%), Referenced to phase 8:WBTL, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.24  
 Intersection Signal Delay: 93.9 Intersection LOS: F  
 Intersection Capacity Utilization 61.9% ICU Level of Service B  
 Analysis Period (min) 15

Splits and Phases: 7: Hawthorne Street/5th Street & Bellingham Street & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 7: Hawthorne Street/5th Street & Bellingham Street & Broadway Weekday Evening

	→	←	↑	↗
Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	1468	611	118	302
v/c Ratio	1.24	0.56	0.33	0.94
Control Delay	134.1	11.2	33.6	71.9
Queue Delay	3.0	0.0	0.0	2.3
Total Delay	137.1	11.2	33.6	74.2
Queue Length 50th (ft)	~1084	196	58	161
Queue Length 95th (ft)	129	m295	108	#321
Internal Link Dist (ft)	551	19	35	
Turn Bay Length (ft)				
Base Capacity (vph)	1188	1090	353	322
Starvation Cap Reductn	189	0	0	0
Spillback Cap Reductn	518	0	0	5
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	2.19	0.56	0.33	0.95

Intersection Summary

- ~ 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.


















2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 9: Washington Avenue & Chestnut Street Weekday Evening

	→	↘	↙	←	↗	↖
Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations			↘	↗		
Traffic Volume (vph)	0	0	300	192	0	0
Future Volume (vph)	0	0	300	192	0	0
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected			0.950	0.989		
Satd. Flow (prot)	0	0	1573	1649	0	0
Flt Permitted			0.950	0.989		
Satd. Flow (perm)	0	0	1573	1649	0	0
Confl. Peds. (#/hr)		149				25
Peak Hour Factor	0.25	0.25	0.92	0.92	0.25	0.25
Heavy Vehicles (%)	0%	0%	9%	8%	0%	0%
Parking (#/hr)	1	0			0	0
Shared Lane Traffic (%)			19%			
Sign Control	Free			Free	Free	

Intersection Summary

Control Type: Unsignalized  
 Intersection Capacity Utilization 35.7% ICU Level of Service A  
 Analysis Period (min) 15

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 10: Fay Square / City Hall Avenue/6th Street & Washington Avenue Weekday Evening

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	189	85	0	244	0	321	0	10	163
Future Volume (vph)	0	0	0	189	85	0	244	0	321	0	10	163
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
Ped Bike Factor								0.99				
Frt								0.923			0.873	
Flt Protected					0.967			0.979				
Satd. Flow (prot)	0	0	0	0	2044	0	0	1634	0	0	1493	0
Flt Permitted					0.967			0.774				
Satd. Flow (perm)	0	0	0	0	2044	0	0	1292	0	0	1493	0
Satd. Flow (RTOR)								151			177	
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.86	0.86	0.84	0.84	0.92	0.90	0.92	0.90	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	0%	6%	0%	5%	0%	3%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8			2			6		
Detector Phase				8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)				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	
Total Split (s)				27.0	27.0		63.0	63.0		63.0	63.0	
Total Split (%)				30.0%	30.0%		70.0%	70.0%		70.0%	70.0%	
Maximum Green (s)				22.5	22.5		58.5	58.5		58.5	58.5	
Yellow Time (s)				3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)				1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)					0.0			0.0			0.0	
Total Lost Time (s)					4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode				None	None		Min	Min		Min	Min	
Walk Time (s)				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	
Pedestrian Calls (#/hr)				0	0		0	0		0	0	
Act Effect Green (s)					14.7			31.2			31.2	
Actuated g/C Ratio					0.26			0.56			0.56	
v/c Ratio					0.61			0.80			0.21	
Control Delay					27.0			16.0			1.8	
Queue Delay					0.0			0.1			0.0	
Total Delay					27.0			16.1			1.8	
LOS					C			B			A	
Approach Delay					27.0			16.1			1.8	
Approach LOS					C			B			A	

Intersection Summary

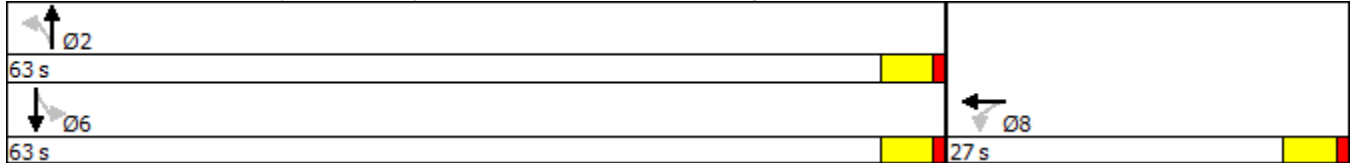
Cycle Length: 90  
 Actuated Cycle Length: 56.1

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 10: Fay Square / City Hall Avenue/6th Street & Washington Avenue Weekday Evening

Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.80  
 Intersection Signal Delay: 16.9  
 Intersection Capacity Utilization 70.0%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service C

Splits and Phases: 10: Fay Square / City Hall Avenue/6th Street & Washington Avenue



















Queues 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 10: Fay Square / City Hall Avenue/6th Street & Washington Avenue Weekday Evening

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	←	↑	↓	
Lane Group	WBT	NBT	SBT	
Lane Group Flow (vph)	326	628	188	
v/c Ratio	0.61	0.80	0.21	
Control Delay	27.0	16.0	1.8	
Queue Delay	0.0	0.1	0.0	
Total Delay	27.0	16.1	1.8	
Queue Length 50th (ft)	87	96	1	
Queue Length 95th (ft)	234	286	23	
Internal Link Dist (ft)	824	258	326	
Turn Bay Length (ft)				
Base Capacity (vph)	934	1186	1371	
Starvation Cap Reductn	0	63	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.35	0.56	0.14	
Intersection Summary				

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 25: Marlborough Street/Fay Square / City Hall Avenue & Broadway Weekday Evening

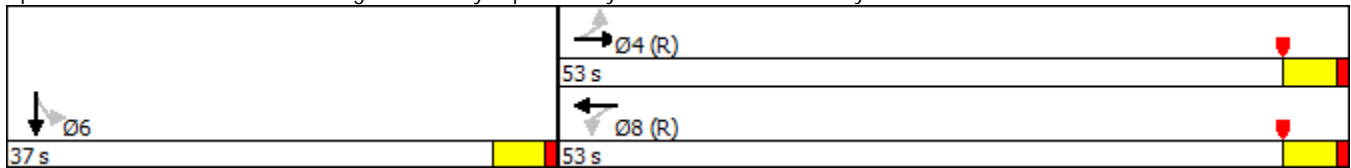
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	414	475	67	10	232	115	0	0	0	14	158	17
Future Volume (vph)	414	475	67	10	232	115	0	0	0	14	158	17
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.96							
Frt		0.981			0.957						0.988	
Flt Protected	0.950				0.999						0.996	
Satd. Flow (prot)	1752	1619	0	0	1760	0	0	0	0	0	1886	0
Flt Permitted	0.469				0.981						0.996	
Satd. Flow (perm)	865	1619	0	0	1729	0	0	0	0	0	1886	0
Satd. Flow (RTOR)		12			41						6	
Confl. Peds. (#/hr)			4			43			85			
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.25	0.25	0.25	0.25	0.25	0.25
Heavy Vehicles (%)	3%	3%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0
Parking (#/hr)		1	0	0	0	2	0	1		0	2	0
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8					6	6	
Switch Phase												
Minimum Initial (s)	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	
Total Split (s)	53.0	53.0		53.0	53.0					37.0	37.0	
Total Split (%)	58.9%	58.9%		58.9%	58.9%					41.1%	41.1%	
Maximum Green (s)	48.5	48.5		48.5	48.5					32.5	32.5	
Yellow Time (s)	3.5	3.5		3.5	3.5					3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0					1.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0						0.0	
Total Lost Time (s)	4.5	4.5			4.5						4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0					3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max					Max	Max	
Walk Time (s)	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	
Pedestrian Calls (#/hr)	0	0		0	0					0	0	
Act Effct Green (s)	48.5	48.5			48.5						32.5	
Actuated g/C Ratio	0.54	0.54			0.54						0.36	
v/c Ratio	1.05	0.73			0.44						1.11	
Control Delay	46.9	13.5			13.0						96.2	
Queue Delay	0.0	3.3			0.0						1.9	
Total Delay	46.9	16.8			13.0						98.1	
LOS	D	B			B						F	
Approach Delay		29.8			13.0						98.1	
Approach LOS		C			B						F	

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 25: Marlborough Street/Fay Square / City Hall Avenue & Broadway Weekday Evening

Intersection Summary





Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 85.5 (95%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.11  
 Intersection Signal Delay: 49.2 Intersection LOS: D  
 Intersection Capacity Utilization 78.1% ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 25: Marlborough Street/Fay Square / City Hall Avenue & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 25: Marlborough Street/Fay Square / City Hall Avenue & Broadway Weekday Evening

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Lane Group	EBL	EBT	WBT	SBT
Lane Group Flow (vph)	487	638	420	756
v/c Ratio	1.05	0.73	0.44	1.11
Control Delay	46.9	13.5	13.0	96.2
Queue Delay	0.0	3.3	0.0	1.9
Total Delay	46.9	16.8	13.0	98.1
Queue Length 50th (ft)	~300	170	121	~494
Queue Length 95th (ft)	m111	m98	176	106
Internal Link Dist (ft)		78	1304	258
Turn Bay Length (ft)				
Base Capacity (vph)	466	877	950	684
Starvation Cap Reductn	0	150	0	157
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.05	0.88	0.44	1.43

Intersection Summary

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- ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

2027 Future Year with Proposed Conceptual Design Conditions (2-Way)  
 30: Park Street & Broadway Weekday Evening
















	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖		
Traffic Volume (vph)	233	0	0	421	0	0
Future Volume (vph)	233	0	0	421	0	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	2153	0	0	1877	0	0
Flt Permitted						
Satd. Flow (perm)	2153	0	0	1877	0	0
Peak Hour Factor	0.92	0.92	0.78	0.78	0.25	0.25
Heavy Vehicles (%)	0%	20%	0%	8%	0%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary

Control Type: Unsignalized  
 Intersection Capacity Utilization 25.5% ICU Level of Service A  
 Analysis Period (min) 15



2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 1: Tremont Street & Williams Street & Broadway Weekday Morning

												
Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	32	53	58	11	53	5	47	79	11	26	378	32
Future Volume (vph)	32	53	58	11	53	5	47	79	11	26	378	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
Ped Bike Factor											1.00	1.00
Frt		0.940					0.942				0.990	
Flt Protected		0.990					0.985				0.996	
Satd. Flow (prot)	0	1837	0	0	0	0	1574	0	0	0	1900	0
Flt Permitted		0.904					0.850				0.909	
Satd. Flow (perm)	0	1678	0	0	0	0	1359	0	0	0	1734	0
Satd. Flow (RTOR)		3					37				5	
Confl. Bikes (#/hr)												5
Peak Hour Factor	0.84	0.84	0.84	0.92	0.85	0.85	0.85	0.85	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	3%	24%	0%	2%	2%	0%	9%	8%	0%	12%	12%	10%
Parking (#/hr)					0	0	2	0				
Shared Lane Traffic (%)												
Turn Type	Perm	NA			Perm	Perm	NA		Perm	Perm	NA	
Protected Phases		3					3				1	
Permitted Phases	3				3	3			1	1		
Detector Phase	3	3			3	3	3		1	1	1	
Switch Phase												
Minimum Initial (s)	8.0	8.0			8.0	8.0	8.0		10.0	10.0	10.0	
Minimum Split (s)	15.0	15.0			15.0	15.0	15.0		17.0	17.0	17.0	
Total Split (s)	24.0	24.0			24.0	24.0	24.0		46.0	46.0	46.0	
Total Split (%)	26.7%	26.7%			26.7%	26.7%	26.7%		51.1%	51.1%	51.1%	
Maximum Green (s)	17.0	17.0			17.0	17.0	17.0		39.0	39.0	39.0	
Yellow Time (s)	4.0	4.0			4.0	4.0	4.0		4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0			3.0	3.0	3.0		3.0	3.0	3.0	
Lost Time Adjust (s)		0.0					0.0				0.0	
Total Lost Time (s)		7.0					7.0				7.0	
Lead/Lag									Lead	Lead	Lead	
Lead-Lag Optimize?									Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0		2.0	2.0	2.0	
Recall Mode	C-Max	C-Max			C-Max	C-Max	C-Max		None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		42.7					42.7				33.3	
Actuated g/C Ratio		0.47					0.47				0.37	
v/c Ratio		0.23					0.33				0.85	
Control Delay		16.3					14.1				38.1	
Queue Delay		0.0					0.0				0.0	
Total Delay		16.3					14.1				38.1	
LOS		B					B				D	
Approach Delay		16.3					14.1				38.1	
Approach LOS		B					B				D	

Intersection Summary

Cycle Length: 90

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 1: Tremont Street & Williams Street & Broadway

Weekday Morning

Lane Group	SBL	SBT	SBR	SBR2	Ø2
Lane Configurations		↔			
Traffic Volume (vph)	16	336	5	26	
Future Volume (vph)	16	336	5	26	
Lane Util. Factor	1.00	1.00	1.00	1.00	
Ped Bike Factor					
Frt		0.989			
Flt Protected		0.998			
Satd. Flow (prot)	0	1889	0	0	
Flt Permitted		0.968			
Satd. Flow (perm)	0	1832	0	0	
Satd. Flow (RTOR)		5			
Confl. Bikes (#/hr)					
Peak Hour Factor	0.79	0.79	0.79	0.79	
Heavy Vehicles (%)	0%	13%	0%	16%	
Parking (#/hr)					
Shared Lane Traffic (%)					
Turn Type	Perm	NA			
Protected Phases		1			2
Permitted Phases	1				
Detector Phase	1	1			
Switch Phase					
Minimum Initial (s)	10.0	10.0			7.0
Minimum Split (s)	17.0	17.0			19.0
Total Split (s)	46.0	46.0			20.0
Total Split (%)	51.1%	51.1%			22%
Maximum Green (s)	39.0	39.0			17.0
Yellow Time (s)	4.0	4.0			2.0
All-Red Time (s)	3.0	3.0			1.0
Lost Time Adjust (s)		0.0			
Total Lost Time (s)		7.0			
Lead/Lag	Lead	Lead			Lag
Lead-Lag Optimize?	Yes	Yes			Yes
Vehicle Extension (s)	2.0	2.0			2.0
Recall Mode	None	None			None
Walk Time (s)					7.0
Flash Dont Walk (s)					9.0
Pedestrian Calls (#/hr)					0
Act Effct Green (s)		33.3			
Actuated g/C Ratio		0.37			
v/c Ratio		0.71			
Control Delay		29.5			
Queue Delay		0.0			
Total Delay		29.5			
LOS		C			
Approach Delay		29.5			
Approach LOS		C			

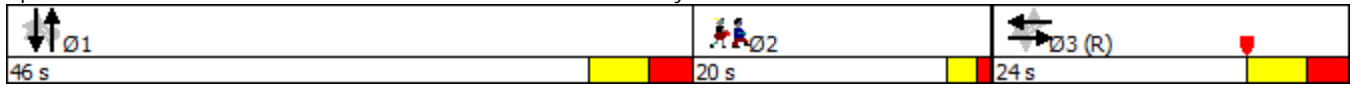
Intersection Summary

Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 1: Tremont Street & Williams Street & Broadway Weekday Morning

Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 3:EBWB, Start of Yellow, Master Intersection  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.85  
 Intersection Signal Delay: 28.8  
 Intersection Capacity Utilization 64.6%  
 Analysis Period (min) 15

Intersection LOS: C  
 ICU Level of Service C

Splits and Phases: 1: Tremont Street & Williams Street & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 1: Tremont Street & Williams Street & Broadway Weekday Morning
















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	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	182	216	545	484
v/c Ratio	0.23	0.33	0.85	0.71
Control Delay	16.3	14.1	38.1	29.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.3	14.1	38.1	29.5
Queue Length 50th (ft)	60	36	268	221
Queue Length 95th (ft)	104	112	319	252
Internal Link Dist (ft)	104	51	615	125
Turn Bay Length (ft)				
Base Capacity (vph)	797	664	754	796
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	0.23	0.33	0.72	0.61

Intersection Summary

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2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 2: 2nd Street & Broadway Weekday Morning











												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	11	168	147	16	26	0	0	237	47
Future Volume (vph)	0	0	0	11	168	147	16	26	0	0	237	47
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
Ped Bike Factor												
Frt					0.939						0.978	
Flt Protected					0.998			0.981				
Satd. Flow (prot)	0	0	0	0	1606	0	0	1963	0	0	1502	0
Flt Permitted					0.998			0.981				
Satd. Flow (perm)	0	0	0	0	1606	0	0	1963	0	0	1502	0
Confl. Peds. (#/hr)			10			8			68			10
Peak Hour Factor	0.25	0.25	0.25	0.83	0.83	0.83	0.58	0.58	0.58	0.81	0.81	0.81
Heavy Vehicles (%)	0%	0%	0%	0%	7%	5%	7%	8%	0%	0%	8%	2%
Parking (#/hr)	0	1	0	0	1	0				0	1	0
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Control Type: Unsignalized  
 Intersection Capacity Utilization 47.7% ICU Level of Service A  
 Analysis Period (min) 15

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 3: Winnisimmet Street & Cross Street/ Everett Avenue & Broadway

Weekday Morning

					
Lane Group	WBL2	WBT	SBT	SBR2	NEL2
Lane Configurations					
Traffic Volume (vph)	284	378	336	116	10
Future Volume (vph)	284	378	336	116	10
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.75	
Frt				0.850	
Flt Protected	0.950				0.950
Satd. Flow (prot)	1569	1605	1635	1346	1841
Flt Permitted	0.950				0.950
Satd. Flow (perm)	1569	1605	1635	1010	1841
Satd. Flow (RTOR)	309			138	329
Confl. Peds. (#/hr)				78	
Confl. Bikes (#/hr)					
Peak Hour Factor	0.92	0.92	0.84	0.84	0.25
Heavy Vehicles (%)	7%	6%	4%	8%	0%
Bus Blockages (#/hr)	0	8	0	0	0
Parking (#/hr)	0	1	1	0	0
Shared Lane Traffic (%)					
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		8	6		
Permitted Phases	8			6	2
Detector Phase	8	8	6	6	2
Switch Phase					
Minimum Initial (s)	10.0	10.0	6.0	6.0	5.0
Minimum Split (s)	20.0	20.0	20.0	20.0	22.5
Total Split (s)	45.0	45.0	45.0	45.0	45.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	40.0	40.0	40.0	40.0	40.5
Yellow Time (s)	3.0	3.0	3.0	3.0	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.5
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Min	C-Min	Min	Min	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	8.0	8.0	8.0	8.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0
Act Effct Green (s)	51.4	51.4	28.6	28.6	29.1
Actuated g/C Ratio	0.57	0.57	0.32	0.32	0.32
v/c Ratio	0.30	0.45	0.77	0.33	0.05
Control Delay	1.5	8.2	37.3	5.5	0.1
Queue Delay	0.9	4.0	0.0	0.0	0.0
Total Delay	2.4	12.2	37.3	5.5	0.1
LOS	A	B	D	A	A
Approach Delay		8.0	29.1		
Approach LOS		A	C		

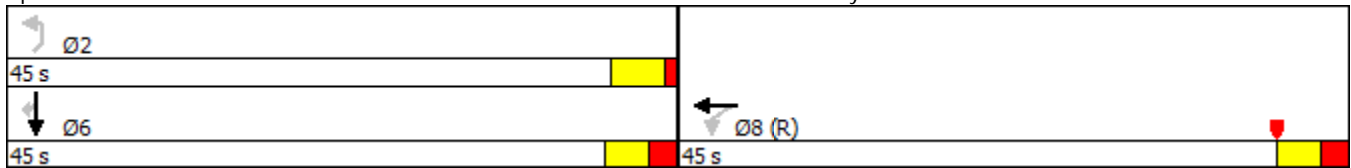
2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
**3: Winnisimmet Street & Cross Street/Everett Avenue & Broadway** Weekday Morning

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 8 (9%), Referenced to phase 8:WBTL, Start of Yellow  
 Natural Cycle: 50  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.77  
 Intersection Signal Delay: 16.5  
 Intersection Capacity Utilization 54.1%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 3: Winnisimmet Street & Cross Street/Everett Avenue & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
**3: Winnisimmet Street & Cross Street/Everett Avenue & Broadway** Weekday Morning

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Lane Group	WBL2	WBT	SBT	SBR2	NEL2
Lane Group Flow (vph)	309	411	400	138	40
v/c Ratio	0.30	0.45	0.77	0.33	0.05
Control Delay	1.5	8.2	37.3	5.5	0.1
Queue Delay	0.9	4.0	0.0	0.0	0.0
Total Delay	2.4	12.2	37.3	5.5	0.1
Queue Length 50th (ft)	1	34	203	0	0
Queue Length 95th (ft)	m31	m185	237	28	0
Internal Link Dist (ft)		148	301		
Turn Bay Length (ft)					
Base Capacity (vph)	1028	916	726	525	1009
Starvation Cap Reductn	467	411	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.55	0.81	0.55	0.26	0.04

Intersection Summary

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



2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 4: Congress Avenue/3rd Street & Broadway Weekday Morning

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	505	226	163	510	0	0	0	0
Future Volume (vph)	0	0	0	0	505	226	163	510	0	0	0	0
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
Ped Bike Factor					0.98							
Frt					0.958							
Flt Protected								0.950				
Satd. Flow (prot)	0	0	0	0	1527	0	1496	1766	0	0	0	0
Flt Permitted								0.950				
Satd. Flow (perm)	0	0	0	0	1527	0	1496	1766	0	0	0	0
Satd. Flow (RTOR)					38		192					
Confl. Peds. (#/hr)			102			31			59			22
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.25	0.25	0.25	0.91	0.91	0.91	0.85	0.85	0.85	0.25	0.25	0.25
Heavy Vehicles (%)	0%	0%	0%	0%	7%	10%	5%	4%	0%	0%	0%	0%
Parking (#/hr)	0	1	0	0	1	0	0				1	
Shared Lane Traffic (%)												
Turn Type					NA		Perm	NA				
Protected Phases					8			2				
Permitted Phases							2					
Detector Phase					8		2	2				
Switch Phase												
Minimum Initial (s)					10.0		6.0	6.0				
Minimum Split (s)					20.0		20.0	20.0				
Total Split (s)					53.0		37.0	37.0				
Total Split (%)					58.9%		41.1%	41.1%				
Maximum Green (s)					48.0		32.0	32.0				
Yellow Time (s)					3.0		3.0	3.0				
All-Red Time (s)					2.0		2.0	2.0				
Lost Time Adjust (s)					0.0		0.0	0.0				
Total Lost Time (s)					5.0		5.0	5.0				
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)					3.0		3.0	3.0				
Recall Mode					C-Min		Min	Min				
Walk Time (s)					7.0		7.0	7.0				
Flash Dont Walk (s)					8.0		8.0	8.0				
Pedestrian Calls (#/hr)					0		0	0				
Act Effct Green (s)					48.2		31.8	31.8				
Actuated g/C Ratio					0.54		0.35	0.35				
v/c Ratio					0.96		0.29	0.96				
Control Delay					41.7		4.5	58.0				
Queue Delay					13.5		0.0	0.0				
Total Delay					55.2		4.5	58.0				
LOS					E		A	E				
Approach Delay					55.2			45.1				
Approach LOS					E			D				

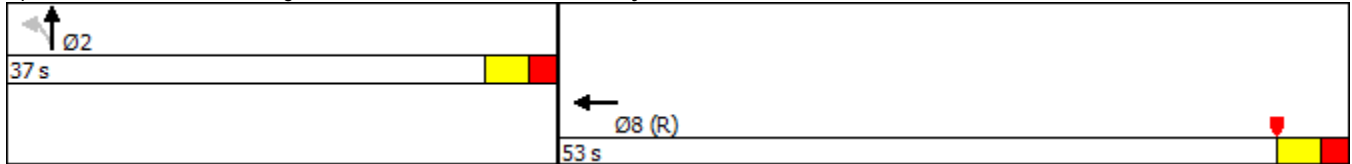
Intersection Summary

Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 4: Congress Avenue/3rd Street & Broadway Weekday Morning

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 74 (82%), Referenced to phase 8:WBT, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 50.2  
 Intersection Capacity Utilization 76.4%  
 Analysis Period (min) 15

Intersection LOS: D  
 ICU Level of Service D

Splits and Phases: 4: Congress Avenue/3rd Street & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
**4: Congress Avenue/3rd Street & Broadway** Weekday Morning

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	←	↙	↑
Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	803	192	600
v/c Ratio	0.96	0.29	0.96
Control Delay	41.7	4.5	58.0
Queue Delay	13.5	0.0	0.0
Total Delay	55.2	4.5	58.0
Queue Length 50th (ft)	375	0	328
Queue Length 95th (ft)	#669	36	#494
Internal Link Dist (ft)	475		238
Turn Bay Length (ft)			
Base Capacity (vph)	835	655	627
Starvation Cap Reductn	7	0	0
Spillback Cap Reductn	50	6	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.02	0.30	0.96
















Intersection Summary

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

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 5: 4th Street & Broadway

Weekday Morning

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	121	531	0	0	0	0	0	137	179
Future Volume (vph)	0	0	0	121	531	0	0	0	0	0	137	179
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
Ped Bike Factor												0.77
Frt												0.850
Flt Protected					0.991							
Satd. Flow (prot)	0	0	0	0	1530	0	0	0	0	0	1596	1516
Flt Permitted					0.991							
Satd. Flow (perm)	0	0	0	0	1530	0	0	0	0	0	1596	1172
Satd. Flow (RTOR)					24							194
Confl. Peds. (#/hr)			131			10			106			70
Confl. Bikes (#/hr)						1						1
Peak Hour Factor	0.25	0.25	0.25	0.85	0.85	0.85	0.25	0.25	0.25	0.78	0.78	0.78
Heavy Vehicles (%)	0%	0%	0%	2%	7%	0%	0%	0%	0%	0%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	17	0	0	0	0	0	0	0
Parking (#/hr)	0	1	0	0	1	0		1		0	1	
Shared Lane Traffic (%)												
Turn Type				Perm	NA						NA	Perm
Protected Phases					8						6	
Permitted Phases				8								6
Detector Phase				8	8						6	6
Switch Phase												
Minimum Initial (s)				10.0	10.0						6.0	6.0
Minimum Split (s)				20.0	20.0						20.0	20.0
Total Split (s)				49.0	49.0						41.0	41.0
Total Split (%)				54.4%	54.4%						45.6%	45.6%
Maximum Green (s)				44.0	44.0						36.0	36.0
Yellow Time (s)				3.0	3.0						3.0	3.0
All-Red Time (s)				2.0	2.0						2.0	2.0
Lost Time Adjust (s)					0.0						0.0	0.0
Total Lost Time (s)					5.0						5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0	3.0						3.0	3.0
Recall Mode				C-Min	C-Min						Min	Min
Walk Time (s)				7.0	7.0						7.0	7.0
Flash Dont Walk (s)				8.0	8.0						8.0	8.0
Pedestrian Calls (#/hr)				0	0						0	0
Act Effct Green (s)					64.1						15.9	15.9
Actuated g/C Ratio					0.71						0.18	0.18
v/c Ratio					0.70						0.63	0.63
Control Delay					8.3						43.3	15.2
Queue Delay					0.5						0.0	0.1
Total Delay					8.8						43.3	15.2
LOS					A						D	B
Approach Delay					8.8						27.4	
Approach LOS					A						C	

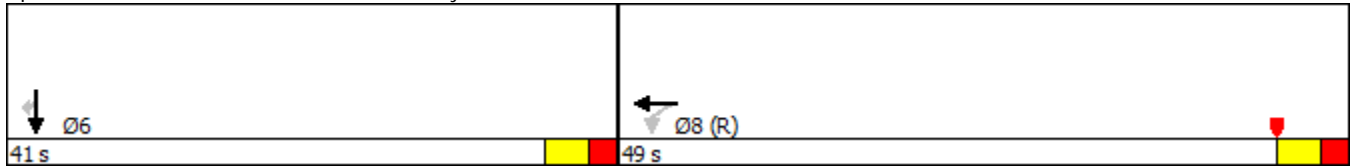
Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 5: 4th Street & Broadway Weekday Morning

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 3 (3%), Referenced to phase 8:WBTL, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.70  
 Intersection Signal Delay: 15.2  
 Intersection Capacity Utilization 61.6%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service B

Splits and Phases: 5: 4th Street & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 5: 4th Street & Broadway Weekday Morning



Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	767	176	229
v/c Ratio	0.70	0.63	0.63
Control Delay	8.3	43.3	15.2
Queue Delay	0.5	0.0	0.1
Total Delay	8.8	43.3	15.2
Queue Length 50th (ft)	113	94	17
Queue Length 95th (ft)	m175	122	50
Internal Link Dist (ft)	551	132	
Turn Bay Length (ft)			
Base Capacity (vph)	1096	638	585
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	79	0	18
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.75	0.28	0.40

Intersection Summary

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

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 6: Hawthorne Street/5th Street & Bellingham Street & Broadway

Weekday Morning

Lane Group	WBL2	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations							
Traffic Volume (vph)	10	897	26	72	59	97	37
Future Volume (vph)	10	897	26	72	59	97	37
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00					
Frt		0.996				0.850	
Flt Protected		0.999			0.973		
Satd. Flow (prot)	0	1675	0	0	1698	1505	0
Flt Permitted		0.999			0.973		
Satd. Flow (perm)	0	1675	0	0	1698	1505	0
Satd. Flow (RTOR)		4				19	
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)			1				
Peak Hour Factor	0.90	0.90	0.90	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	8%	0%	0%	10%	0%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0	20
Parking (#/hr)	0	1	0	0	0	0	0
Shared Lane Traffic (%)							
Turn Type	Perm	NA		Perm	NA	Perm	
Protected Phases		8			2		
Permitted Phases	8			2		2	
Detector Phase	8	8		2	2	2	
Switch Phase							
Minimum Initial (s)	5.0	5.0		6.0	6.0	6.0	
Minimum Split (s)	22.5	22.5		16.0	16.0	16.0	
Total Split (s)	68.0	68.0		22.0	22.0	22.0	
Total Split (%)	75.6%	75.6%		24.4%	24.4%	24.4%	
Maximum Green (s)	63.5	63.5		19.0	19.0	19.0	
Yellow Time (s)	3.5	3.5		2.0	2.0	2.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	
Total Lost Time (s)		4.5			3.0	3.0	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		Max	Max	Max	
Walk Time (s)	7.0	7.0		6.0	6.0	6.0	
Flash Dont Walk (s)	11.0	11.0		7.0	7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	
Act Effct Green (s)		63.5			19.0	19.0	
Actuated g/C Ratio		0.71			0.21	0.21	
v/c Ratio		0.88			0.43	0.47	
Control Delay		9.6			35.1	32.6	
Queue Delay		0.0			0.0	124.9	
Total Delay		9.6			35.1	157.5	
LOS		A			D	F	
Approach Delay		9.6			96.9		
Approach LOS		A			F		

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 6: Hawthorne Street/5th Street & Bellingham Street & Broadway

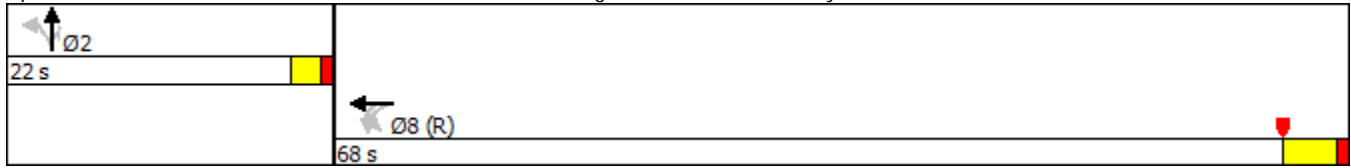
Weekday Morning

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 8:WBTL, Start of Yellow  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 29.6  
 Intersection Capacity Utilization 86.7%  
 Analysis Period (min) 15

Intersection LOS: C  
 ICU Level of Service E

Splits and Phases: 6: Hawthorne Street/5th Street & Bellingham Street & Broadway





Queues 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 6: Hawthorne Street/5th Street & Bellingham Street & Broadway Weekday Morning

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	←	↑	↘
Lane Group	WBT	NBT	NBR
Lane Group Flow (vph)	1037	153	156
v/c Ratio	0.88	0.43	0.47
Control Delay	9.6	35.1	32.6
Queue Delay	0.0	0.0	124.9
Total Delay	9.6	35.1	157.5
Queue Length 50th (ft)	265	76	68
Queue Length 95th (ft)	m204	128	122
Internal Link Dist (ft)	19	35	
Turn Bay Length (ft)			
Base Capacity (vph)	1182	358	332
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	306
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.88	0.43	6.00











Intersection Summary

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

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 7: Broadway & Washington Avenue

Weekday Morning

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	97	274	0	18	659
Future Volume (vph)	0	97	274	0	18	659
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						0.98
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	1814	1757	0	1428	1502
Flt Permitted					0.950	
Satd. Flow (perm)	0	1814	1757	0	1428	1470
Satd. Flow (RTOR)						68
Confl. Peds. (#/hr)	83					
Confl. Bikes (#/hr)						1
Peak Hour Factor	0.25	0.25	0.25	0.25	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	8%	0%
Bus Blockages (#/hr)	0	0	0	0	19	0
Parking (#/hr)	0	1	1	0	1	0
Shared Lane Traffic (%)						
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		5.0	5.0		5.0	5.0
Minimum Split (s)		22.5	22.5		22.5	22.5
Total Split (s)		52.0	52.0		38.0	38.0
Total Split (%)		57.8%	57.8%		42.2%	42.2%
Maximum Green (s)		47.5	47.5		33.5	33.5
Yellow Time (s)		3.5	3.5		3.5	3.5
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		C-Max	C-Max		Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		47.5	47.5		33.5	33.5
Actuated g/C Ratio		0.53	0.53		0.37	0.37
v/c Ratio		0.41	1.18		0.04	1.24
Control Delay		21.0	116.4		18.4	149.0
Queue Delay		0.0	0.6		0.0	9.2
Total Delay		21.0	117.0		18.4	158.2
LOS		C	F		B	F
Approach Delay		21.0	117.0		154.5	
Approach LOS		C	F		F	

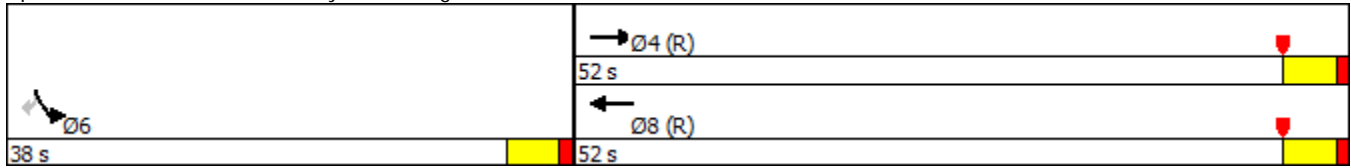
Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 7: Broadway & Washington Avenue Weekday Morning

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.24  
 Intersection Signal Delay: 112.9  
 Intersection Capacity Utilization 60.1%  
 Analysis Period (min) 15

Intersection LOS: F  
 ICU Level of Service B

Splits and Phases: 7: Broadway & Washington Avenue



Queues 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 7: Broadway & Washington Avenue Weekday Morning

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	→	←	↘	↙
Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	388	1096	20	732
v/c Ratio	0.41	1.18	0.04	1.24
Control Delay	21.0	116.4	18.4	149.0
Queue Delay	0.0	0.6	0.0	9.2
Total Delay	21.0	117.0	18.4	158.2
Queue Length 50th (ft)	161	~756	7	~500
Queue Length 95th (ft)	56	115	22	#720
Internal Link Dist (ft)	19	80	10	
Turn Bay Length (ft)				
Base Capacity (vph)	957	927	531	589
Starvation Cap Reductn	0	92	0	0
Spillback Cap Reductn	0	2	0	347
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.41	1.31	0.04	3.02

Intersection Summary

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- ~ 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.

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 9: Washington Avenue & Chestnut Street Weekday Morning

	→	↘	↙	←	↗	↖
Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations			↘	↖		
Traffic Volume (vph)	0	0	467	466	0	0
Future Volume (vph)	0	0	467	466	0	0
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected			0.950	0.995		
Satd. Flow (prot)	0	0	1517	1670	0	0
Flt Permitted			0.950	0.995		
Satd. Flow (perm)	0	0	1517	1670	0	0
Confl. Peds. (#/hr)						22
Peak Hour Factor	0.25	0.25	0.92	0.92	0.25	0.25
Heavy Vehicles (%)	0%	0%	13%	7%	0%	0%
Parking (#/hr)	1	0			0	0
Shared Lane Traffic (%)			10%			
Sign Control	Free			Free	Free	

Intersection Summary

Control Type: Unsignalized  
 Intersection Capacity Utilization 40.4% ICU Level of Service A  
 Analysis Period (min) 15

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 10: Fay Square / City Hall Avenue/6th Street & Washington Avenue Weekday Morning

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	161	354	0	469	0	163	1	10	110
Future Volume (vph)	0	0	0	161	354	0	469	0	163	1	10	110
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
Ped Bike Factor								0.99				
Frt								0.965			0.877	
Flt Protected					0.985			0.964				
Satd. Flow (prot)	0	0	0	0	2010	0	0	1628	0	0	1500	0
Flt Permitted					0.985			0.699			0.998	
Satd. Flow (perm)	0	0	0	0	2010	0	0	1180	0	0	1497	0
Satd. Flow (RTOR)								32			147	
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.75	0.75	0.89	0.89	0.92	0.91	0.92	0.91	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	8%	2%	8%	2%	8%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type				Perm	NA		Perm	NA		Perm	NA	
Protected Phases					8			2			6	
Permitted Phases				8			2			6		
Detector Phase				8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)				22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)				35.0	35.0		55.0	55.0		55.0	55.0	
Total Split (%)				38.9%	38.9%		61.1%	61.1%		61.1%	61.1%	
Maximum Green (s)				30.5	30.5		50.5	50.5		50.5	50.5	
Yellow Time (s)				3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)				1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)					0.0			0.0			0.0	
Total Lost Time (s)					4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode				None	None		Min	Min		Min	Min	
Walk Time (s)				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	
Pedestrian Calls (#/hr)				0	0		0	0		0	0	
Act Effct Green (s)					28.1			50.6			50.6	
Actuated g/C Ratio					0.32			0.58			0.58	
v/c Ratio					0.90			1.00			0.17	
Control Delay					47.1			55.3			2.6	
Queue Delay					0.0			34.6			0.0	
Total Delay					47.1			89.9			2.6	
LOS					D			F			A	
Approach Delay					47.1			89.9			2.6	
Approach LOS					D			F			A	

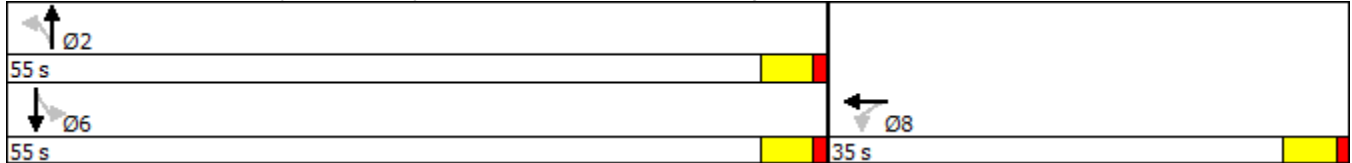
Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 87.7

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 10: Fay Square / City Hall Avenue/6th Street & Washington Avenue Weekday Morning

Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.00  
 Intersection Signal Delay: 62.8  
 Intersection LOS: E  
 Intersection Capacity Utilization 77.6%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 10: Fay Square / City Hall Avenue/6th Street & Washington Avenue



Queues 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 10: Fay Square / City Hall Avenue/6th Street & Washington Avenue Weekday Morning

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	←	↑	↓
Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	579	694	161
v/c Ratio	0.90	1.00	0.17
Control Delay	47.1	55.3	2.6
Queue Delay	0.0	34.6	0.0
Total Delay	47.1	89.9	2.6
Queue Length 50th (ft)	302	-417	3
Queue Length 95th (ft)	#475	#633	18
Internal Link Dist (ft)	824	258	326
Turn Bay Length (ft)			
Base Capacity (vph)	700	694	925
Starvation Cap Reductn	0	92	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.83	1.15	0.17

Intersection Summary

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- ~ 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.



2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 25: Marlborough Street/Fay Square / City Hall Avenue & Broadway Weekday Morning

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	221	279	127	10	254	177	0	0	0	10	136	15
Future Volume (vph)	221	279	127	10	254	177	0	0	0	10	136	15
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
Ped Bike Factor		0.99			0.96							
Frt		0.953			0.946						0.987	
Flt Protected	0.950				0.999						0.997	
Satd. Flow (prot)	1671	1497	0	0	1718	0	0	0	0	0	1886	0
Flt Permitted	0.404				0.988						0.997	
Satd. Flow (perm)	711	1497	0	0	1699	0	0	0	0	0	1886	0
Satd. Flow (RTOR)		37			54						7	
Confl. Peds. (#/hr)			9			35			57			
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.81	0.81	0.81	0.88	0.88	0.88	0.38	0.38	0.38	0.25	0.25	0.25
Heavy Vehicles (%)	8%	9%	2%	0%	0%	5%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0
Parking (#/hr)		1	0	0	0	2	0	1		0	2	0
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8					6	6	
Switch Phase												
Minimum Initial (s)	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	
Total Split (s)	50.0	50.0		50.0	50.0					40.0	40.0	
Total Split (%)	55.6%	55.6%		55.6%	55.6%					44.4%	44.4%	
Maximum Green (s)	45.5	45.5		45.5	45.5					35.5	35.5	
Yellow Time (s)	3.5	3.5		3.5	3.5					3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0					1.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0						0.0	
Total Lost Time (s)	4.5	4.5			4.5						4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0					3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max					Max	Max	
Walk Time (s)	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	
Pedestrian Calls (#/hr)	0	0		0	0					0	0	
Act Effct Green (s)	45.5	45.5			45.5						35.5	
Actuated g/C Ratio	0.51	0.51			0.51						0.39	
v/c Ratio	0.76	0.65			0.57						0.86	
Control Delay	29.5	14.8			16.6						38.4	
Queue Delay	0.0	0.3			0.0						50.0	
Total Delay	29.5	15.1			16.6						88.4	
LOS	C	B			B						F	
Approach Delay		20.2			16.6						88.4	
Approach LOS		C			B						F	

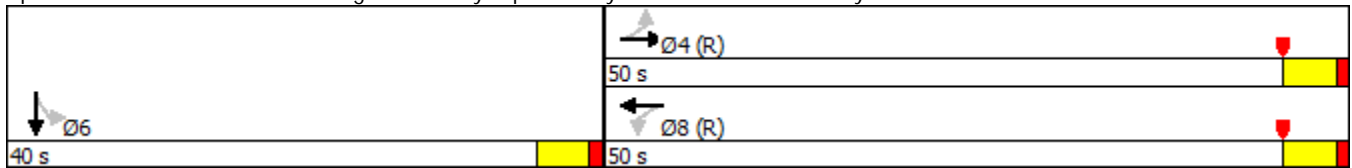
2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 25: Marlborough Street/Fay Square / City Hall Avenue & Broadway Weekday Morning

Intersection Summary





Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.86  
 Intersection Signal Delay: 42.1  
 Intersection Capacity Utilization 75.2%  
 Analysis Period (min) 15

Intersection LOS: D  
 ICU Level of Service D

Splits and Phases: 25: Marlborough Street/Fay Square / City Hall Avenue & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 25: Marlborough Street/Fay Square / City Hall Avenue & Broadway Weekday Morning

				
Lane Group	EBL	EBT	WBT	SBT
Lane Group Flow (vph)	273	501	501	644
v/c Ratio	0.76	0.65	0.57	0.86
Control Delay	29.5	14.8	16.6	38.4
Queue Delay	0.0	0.3	0.0	50.0
Total Delay	29.5	15.1	16.6	88.4
Queue Length 50th (ft)	73	114	167	325
Queue Length 95th (ft)	#205	144	252	84
Internal Link Dist (ft)		78	1304	258
Turn Bay Length (ft)				
Base Capacity (vph)	359	775	885	748
Starvation Cap Reductn	0	36	0	213
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.76	0.68	0.57	1.20

Intersection Summary

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
















2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 30: Park Street & Broadway Weekday Morning

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations		↗		↖		
Traffic Volume (vph)	0	101	0	184	0	0
Future Volume (vph)	0	101	0	184	0	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865				
Flt Protected						
Satd. Flow (prot)	0	1502	0	1703	0	0
Flt Permitted						
Satd. Flow (perm)	0	1502	0	1703	0	0
Peak Hour Factor	0.84	0.84	0.85	0.85	0.25	0.25
Heavy Vehicles (%)	0%	24%	0%	19%	0%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary

Control Type: Unsignalized  
 Intersection Capacity Utilization 13.0% ICU Level of Service A  
 Analysis Period (min) 15

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 1: Tremont Street & Williams Street & Broadway Weekday Evening

												
Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	16	68	89	5	21	5	53	89	11	26	441	32
Future Volume (vph)	16	68	89	5	21	5	53	89	11	26	441	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
Ped Bike Factor											1.00	1.00
Frt		0.929					0.928				0.992	
Flt Protected		0.996					0.992				0.996	
Satd. Flow (prot)	0	1808	0	0	0	0	1631	0	0	0	2000	0
Flt Permitted		0.967					0.934				0.894	
Satd. Flow (perm)	0	1756	0	0	0	0	1536	0	0	0	1795	0
Satd. Flow (RTOR)		1					57				5	
Confl. Bikes (#/hr)												2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.78	0.78	0.78	0.78	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	20%	5%	0%	5%	0%	2%	1%	0%	0%	7%	3%
Parking (#/hr)					0	0	2	0				
Shared Lane Traffic (%)												
Turn Type	Perm	NA			Perm	Perm	NA		Perm	Perm	NA	
Protected Phases		3					3				1	
Permitted Phases	3				3	3			1	1		
Detector Phase	3	3			3	3	3		1	1	1	
Switch Phase												
Minimum Initial (s)	8.0	8.0			8.0	8.0	8.0		10.0	10.0	10.0	
Minimum Split (s)	15.0	15.0			15.0	15.0	15.0		17.0	17.0	17.0	
Total Split (s)	26.0	26.0			26.0	26.0	26.0		45.0	45.0	45.0	
Total Split (%)	28.9%	28.9%			28.9%	28.9%	28.9%		50.0%	50.0%	50.0%	
Maximum Green (s)	19.0	19.0			19.0	19.0	19.0		38.0	38.0	38.0	
Yellow Time (s)	4.0	4.0			4.0	4.0	4.0		4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0			3.0	3.0	3.0		3.0	3.0	3.0	
Lost Time Adjust (s)		0.0					0.0				0.0	
Total Lost Time (s)		7.0					7.0				7.0	
Lead/Lag									Lead	Lead	Lead	
Lead-Lag Optimize?									Yes	Yes	Yes	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0		2.0	2.0	2.0	
Recall Mode	C-Max	C-Max			C-Max	C-Max	C-Max		None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		43.2					43.2				32.8	
Actuated g/C Ratio		0.48					0.48				0.36	
v/c Ratio		0.23					0.28				0.83	
Control Delay		16.0					12.7				37.3	
Queue Delay		0.0					0.0				0.0	
Total Delay		16.0					12.7				37.3	
LOS		B					B				D	
Approach Delay		16.0					12.7				37.3	
Approach LOS		B					B				D	

Intersection Summary

Cycle Length: 90

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 1: Tremont Street & Williams Street & Broadway

Weekday Evening

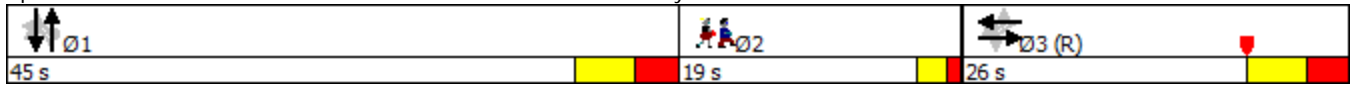
Lane Group	SBL	SBT	SBR	SBR2	Ø2
Lane Configurations		↕			
Traffic Volume (vph)	21	426	5	21	
Future Volume (vph)	21	426	5	21	
Lane Util. Factor	1.00	1.00	1.00	1.00	
Ped Bike Factor		1.00			
Frt		0.993			
Flt Protected		0.998			
Satd. Flow (prot)	0	2031	0	0	
Flt Permitted		0.958			
Satd. Flow (perm)	0	1950	0	0	
Satd. Flow (RTOR)		3			
Confl. Bikes (#/hr)			2		
Peak Hour Factor	0.82	0.82	0.82	0.82	
Heavy Vehicles (%)	0%	5%	0%	10%	
Parking (#/hr)					
Shared Lane Traffic (%)					
Turn Type	Perm	NA			
Protected Phases		1			2
Permitted Phases	1				
Detector Phase	1	1			
Switch Phase					
Minimum Initial (s)	10.0	10.0			7.0
Minimum Split (s)	17.0	17.0			19.0
Total Split (s)	45.0	45.0			19.0
Total Split (%)	50.0%	50.0%			21%
Maximum Green (s)	38.0	38.0			16.0
Yellow Time (s)	4.0	4.0			2.0
All-Red Time (s)	3.0	3.0			1.0
Lost Time Adjust (s)		0.0			
Total Lost Time (s)		7.0			
Lead/Lag	Lead	Lead			Lag
Lead-Lag Optimize?	Yes	Yes			Yes
Vehicle Extension (s)	2.0	2.0			2.0
Recall Mode	None	None			None
Walk Time (s)					7.0
Flash Dont Walk (s)					9.0
Pedestrian Calls (#/hr)					0
Act Effct Green (s)		32.8			
Actuated g/C Ratio		0.36			
v/c Ratio		0.81			
Control Delay		35.0			
Queue Delay		0.0			
Total Delay		35.0			
LOS		C			
Approach Delay		35.0			
Approach LOS		C			

Intersection Summary

Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 1: Tremont Street & Williams Street & Broadway Weekday Evening

Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 3:EBWB, Start of Yellow, Master Intersection  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 30.3 Intersection LOS: C  
 Intersection Capacity Utilization 66.0% ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 1: Tremont Street & Williams Street & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 1: Tremont Street & Williams Street & Broadway Weekday Evening

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













	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	193	215	548	578
v/c Ratio	0.23	0.28	0.83	0.81
Control Delay	16.0	12.7	37.3	35.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.0	12.7	37.3	35.0
Queue Length 50th (ft)	63	36	271	284
Queue Length 95th (ft)	117	91	375	331
Internal Link Dist (ft)	104	51	615	125
Turn Bay Length (ft)				
Base Capacity (vph)	843	766	760	825
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	0.23	0.28	0.72	0.70

Intersection Summary

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2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 2: 2nd Street & Broadway Weekday Evening

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	21	137	105	16	21	0	0	258	53
Future Volume (vph)	0	0	0	21	137	105	16	21	0	0	258	53
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
Ped Bike Factor												
Frt					0.946						0.977	
Flt Protected					0.996			0.979				
Satd. Flow (prot)	0	0	0	0	1687	0	0	2050	0	0	1569	0
Flt Permitted					0.996			0.979				
Satd. Flow (perm)	0	0	0	0	1687	0	0	2050	0	0	1569	0
Confl. Peds. (#/hr)			50			26			160			27
Peak Hour Factor	0.25	0.25	0.25	0.76	0.76	0.76	0.69	0.69	0.69	0.83	0.83	0.83
Heavy Vehicles (%)	0%	0%	0%	0%	1%	2%	0%	5%	0%	0%	2%	4%
Parking (#/hr)	0	1	0	0	1	0				0	1	0
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Control Type: Unsignalized  
 Intersection Capacity Utilization 46.3% ICU Level of Service A  
 Analysis Period (min) 15

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 3: Winnisimmet Street & Cross Street/ Everett Avenue & Broadway Weekday Evening

					
Lane Group	WBL2	WBT	SBT	SBR2	NEL2
Lane Configurations					
Traffic Volume (vph)	200	279	447	127	10
Future Volume (vph)	200	279	447	127	10
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor				0.47	
Frt				0.850	
Flt Protected	0.950				0.950
Satd. Flow (prot)	1584	1684	1684	1454	1841
Flt Permitted	0.950				0.950
Satd. Flow (perm)	1584	1684	1684	676	1841
Satd. Flow (RTOR)	233			140	347
Confl. Peds. (#/hr)				208	
Confl. Bikes (#/hr)				1	
Peak Hour Factor	0.86	0.86	0.91	0.91	0.25
Heavy Vehicles (%)	6%	1%	1%	0%	0%
Bus Blockages (#/hr)	0	8	0	0	0
Parking (#/hr)	0	1	1	0	0
Shared Lane Traffic (%)					
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		8	6		
Permitted Phases	8			6	2
Detector Phase	8	8	6	6	2
Switch Phase					
Minimum Initial (s)	10.0	10.0	6.0	6.0	5.0
Minimum Split (s)	20.0	20.0	20.0	20.0	22.5
Total Split (s)	38.0	38.0	52.0	52.0	52.0
Total Split (%)	42.2%	42.2%	57.8%	57.8%	57.8%
Maximum Green (s)	33.0	33.0	47.0	47.0	47.5
Yellow Time (s)	3.0	3.0	3.0	3.0	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.5
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Min	C-Min	Min	Min	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	8.0	8.0	8.0	8.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0
Act Effct Green (s)	45.8	45.8	34.2	34.2	34.7
Actuated g/C Ratio	0.51	0.51	0.38	0.38	0.39
v/c Ratio	0.25	0.38	0.77	0.41	0.04
Control Delay	1.4	11.3	31.9	6.3	0.1
Queue Delay	0.7	2.3	0.0	0.0	0.0
Total Delay	2.2	13.6	31.9	6.3	0.1
LOS	A	B	C	A	A
Approach Delay		8.8	26.3		
Approach LOS		A	C		

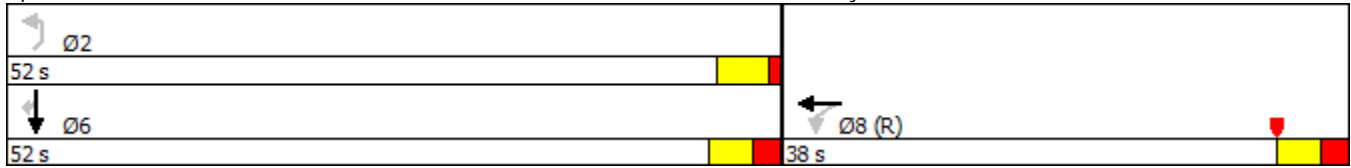
2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
**3: Winnisimmet Street & Cross Street/Everett Avenue & Broadway** Weekday Evening

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 5 (6%), Referenced to phase 8:WBTL, Start of Yellow  
 Natural Cycle: 50  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.77  
 Intersection Signal Delay: 17.5  
 Intersection Capacity Utilization 59.5%  
 Analysis Period (min) 15






Intersection LOS: B  
 ICU Level of Service B

Splits and Phases: 3: Winnisimmet Street & Cross Street/Everett Avenue & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
**3: Winnisimmet Street & Cross Street/Everett Avenue & Broadway** Weekday Evening

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Lane Group	WBL2	WBT	SBT	SBR2	NEL2
Lane Group Flow (vph)	233	324	491	140	40
v/c Ratio	0.25	0.38	0.77	0.41	0.04
Control Delay	1.4	11.3	31.9	6.3	0.1
Queue Delay	0.7	2.3	0.0	0.0	0.0
Total Delay	2.2	13.6	31.9	6.3	0.1
Queue Length 50th (ft)	0	54	238	0	0
Queue Length 95th (ft)	m0	m130	291	32	0
Internal Link Dist (ft)		148	301		
Turn Bay Length (ft)					
Base Capacity (vph)	919	856	879	419	1135
Starvation Cap Reductn	413	393	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.46	0.70	0.56	0.33	0.04

Intersection Summary

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

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 4: Congress Avenue/3rd Street & Broadway Weekday Evening

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	336	215	147	541	0	0	0	0
Future Volume (vph)	0	0	0	0	336	215	147	541	0	0	0	0
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
Ped Bike Factor					0.96							
Frt					0.947							
Flt Protected							0.950					
Satd. Flow (prot)	0	0	0	0	1498	0	1540	1801	0	0	0	0
Flt Permitted							0.950					
Satd. Flow (perm)	0	0	0	0	1498	0	1540	1801	0	0	0	0
Satd. Flow (RTOR)					32		155					
Confl. Peds. (#/hr)			112			52			225			84
Confl. Bikes (#/hr)			3			3						2
Peak Hour Factor	0.25	0.25	0.25	0.90	0.90	0.90	0.95	0.95	0.95	0.25	0.25	0.25
Heavy Vehicles (%)	0%	0%	0%	0%	5%	9%	2%	2%	0%	0%	0%	0%
Parking (#/hr)	0	1	0	0	1	0	0				1	
Shared Lane Traffic (%)												
Turn Type					NA		Perm	NA				
Protected Phases					8			2				
Permitted Phases							2					
Detector Phase					8		2	2				
Switch Phase												
Minimum Initial (s)					10.0		6.0	6.0				
Minimum Split (s)					20.0		20.0	20.0				
Total Split (s)					50.0		40.0	40.0				
Total Split (%)					55.6%		44.4%	44.4%				
Maximum Green (s)					45.0		35.0	35.0				
Yellow Time (s)					3.0		3.0	3.0				
All-Red Time (s)					2.0		2.0	2.0				
Lost Time Adjust (s)					0.0		0.0	0.0				
Total Lost Time (s)					5.0		5.0	5.0				
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)					3.0		3.0	3.0				
Recall Mode					C-Min		Min	Min				
Walk Time (s)					7.0		7.0	7.0				
Flash Dont Walk (s)					8.0		8.0	8.0				
Pedestrian Calls (#/hr)					0		0	0				
Act Effct Green (s)					47.5		32.5	32.5				
Actuated g/C Ratio					0.53		0.36	0.36				
v/c Ratio					0.76		0.24	0.88				
Control Delay					18.2		4.1	42.4				
Queue Delay					0.3		0.0	0.0				
Total Delay					18.5		4.1	42.4				
LOS					B		A	D				
Approach Delay					18.5			34.2				
Approach LOS					B			C				

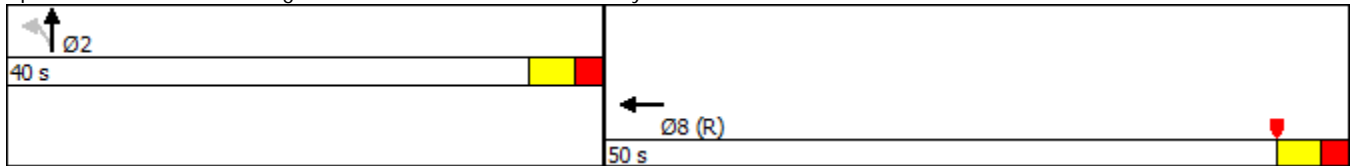
Intersection Summary

Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 4: Congress Avenue/3rd Street & Broadway Weekday Evening

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 8:WBT, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 27.0  
 Intersection Capacity Utilization 69.2%  
 Analysis Period (min) 15

Intersection LOS: C  
 ICU Level of Service C

Splits and Phases: 4: Congress Avenue/3rd Street & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
**4: Congress Avenue/3rd Street & Broadway** Weekday Evening

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	←	↙	↑
Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	612	155	569
v/c Ratio	0.76	0.24	0.88
Control Delay	18.2	4.1	42.4
Queue Delay	0.3	0.0	0.0
Total Delay	18.5	4.1	42.4
Queue Length 50th (ft)	331	0	280
Queue Length 95th (ft)	#329	37	#460
Internal Link Dist (ft)	475		238
Turn Bay Length (ft)			
Base Capacity (vph)	807	695	702
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	24	2	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.78	0.22	0.81
















Intersection Summary

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

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 5: 4th Street & Broadway

Weekday Evening

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	126	389	0	0	0	0	0	268	184
Future Volume (vph)	0	0	0	126	389	0	0	0	0	0	268	184
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
Ped Bike Factor												0.55
Frt												0.850
Flt Protected					0.988							
Satd. Flow (prot)	0	0	0	0	1533	0	0	0	0	0	1612	1546
Flt Permitted					0.988							
Satd. Flow (perm)	0	0	0	0	1533	0	0	0	0	0	1612	855
Satd. Flow (RTOR)					29							216
Confl. Peds. (#/hr)			119			20			219			145
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.25	0.25	0.25	0.89	0.89	0.89	0.25	0.25	0.25	0.85	0.85	0.85
Heavy Vehicles (%)	0%	0%	0%	1%	7%	0%	0%	0%	0%	0%	2%	1%
Bus Blockages (#/hr)	0	0	0	0	17	0	0	0	0	0	0	0
Parking (#/hr)	0	1	0	0	1	0		1		0	1	
Shared Lane Traffic (%)												
Turn Type				Perm	NA						NA	Perm
Protected Phases					8						6	
Permitted Phases				8								6
Detector Phase				8	8						6	6
Switch Phase												
Minimum Initial (s)				10.0	10.0						6.0	6.0
Minimum Split (s)				20.0	20.0						20.0	20.0
Total Split (s)				55.0	55.0						35.0	35.0
Total Split (%)				61.1%	61.1%						38.9%	38.9%
Maximum Green (s)				50.0	50.0						30.0	30.0
Yellow Time (s)				3.0	3.0						3.0	3.0
All-Red Time (s)				2.0	2.0						2.0	2.0
Lost Time Adjust (s)					0.0						0.0	0.0
Total Lost Time (s)					5.0						5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0	3.0						3.0	3.0
Recall Mode				C-Min	C-Min						Min	Min
Walk Time (s)				7.0	7.0						7.0	7.0
Flash Dont Walk (s)				8.0	8.0						8.0	8.0
Pedestrian Calls (#/hr)				0	0						0	0
Act Effct Green (s)					56.9						23.1	23.1
Actuated g/C Ratio					0.63						0.26	0.26
v/c Ratio					0.59						0.76	0.57
Control Delay					11.9						42.5	9.8
Queue Delay					0.1						0.0	0.0
Total Delay					11.9						42.5	9.9
LOS					B						D	A
Approach Delay					11.9						29.2	
Approach LOS					B						C	



Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
5: 4th Street & Broadway

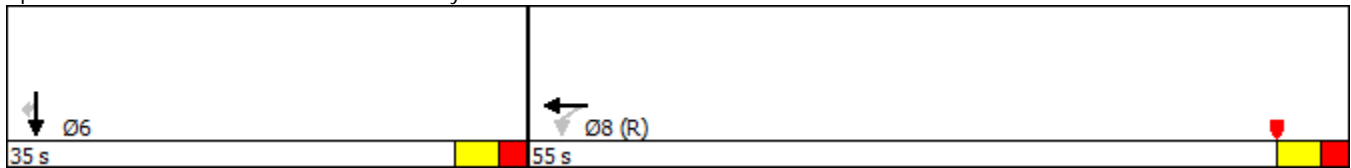
Weekday Evening

Intersection Summary

Cycle Length: 90  
Actuated Cycle Length: 90  
Offset: 0 (0%), Referenced to phase 8:WBTL, Start of Yellow  
Natural Cycle: 55  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.76  
Intersection Signal Delay: 20.2  
Intersection Capacity Utilization 56.5%  
Analysis Period (min) 15

Intersection LOS: C  
ICU Level of Service B

Splits and Phases: 5: 4th Street & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 5: 4th Street & Broadway Weekday Evening

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Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	579	315	216
v/c Ratio	0.59	0.76	0.57
Control Delay	11.9	42.5	9.8
Queue Delay	0.1	0.0	0.0
Total Delay	11.9	42.5	9.9
Queue Length 50th (ft)	17	164	0
Queue Length 95th (ft)	m438	216	44
Internal Link Dist (ft)	551	132	
Turn Bay Length (ft)			
Base Capacity (vph)	979	537	429
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	26	0	3
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.61	0.59	0.51

Intersection Summary











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

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)

6: Broadway

Weekday Evening

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	245	252	0	21	508
Future Volume (vph)	0	245	252	0	21	508
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						0.98
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	1824	1757	0	1679	1302
Flt Permitted					0.950	
Satd. Flow (perm)	0	1824	1757	0	1679	1275
Satd. Flow (RTOR)						96
Confl. Bikes (#/hr)						1
Peak Hour Factor	0.25	0.25	0.25	0.25	0.88	0.88
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%
Bus Blockages (#/hr)	0	0	0	0	0	19
Parking (#/hr)	0	0	1	0	0	1
Shared Lane Traffic (%)						
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		5.0	5.0		5.0	5.0
Minimum Split (s)		22.5	22.5		22.5	22.5
Total Split (s)		54.0	54.0		36.0	36.0
Total Split (%)		60.0%	60.0%		40.0%	40.0%
Maximum Green (s)		49.5	49.5		31.5	31.5
Yellow Time (s)		3.5	3.5		3.5	3.5
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		C-Max	C-Max		Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0
Act Effct Green (s)		49.5	49.5		31.5	31.5
Actuated g/C Ratio		0.55	0.55		0.35	0.35
v/c Ratio		0.98	1.04		0.04	1.14
Control Delay		41.0	63.1		19.7	108.5
Queue Delay		0.3	29.9		0.0	0.6
Total Delay		41.4	93.0		19.7	109.1
LOS		D	F		B	F
Approach Delay		41.4	93.0		105.5	
Approach LOS		D	F		F	

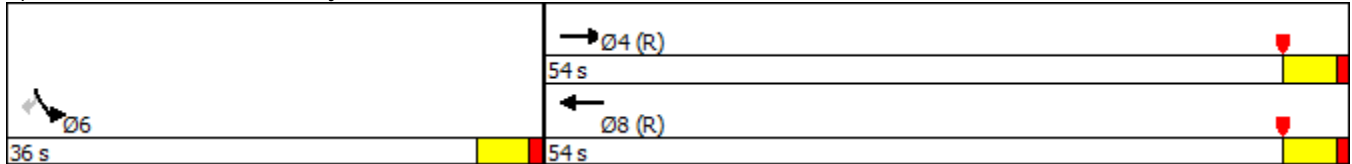
Intersection Summary

Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 6: Broadway Weekday Evening

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow  
 Natural Cycle: 130  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.14  
 Intersection Signal Delay: 76.4  
 Intersection Capacity Utilization 52.2%  
 Analysis Period (min) 15

Intersection LOS: E  
 ICU Level of Service A

Splits and Phases: 6: Broadway



Queues  
6: Broadway

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)












Weekday Evening

	→	←	↘	↙
Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	980	1008	24	577
v/c Ratio	0.98	1.04	0.04	1.14
Control Delay	41.0	63.1	19.7	108.5
Queue Delay	0.3	29.9	0.0	0.6
Total Delay	41.4	93.0	19.7	109.1
Queue Length 50th (ft)	552	-627	9	-349
Queue Length 95th (ft)	68	99	25	#533
Internal Link Dist (ft)	19	80	10	
Turn Bay Length (ft)				
Base Capacity (vph)	1003	966	587	508
Starvation Cap Reductn	0	123	0	0
Spillback Cap Reductn	2	630	0	34
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.98	3.00	0.04	1.22

Intersection Summary

- ~ 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.

Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 7: Hawthorne Street/5th Street & Bellingham Street & Broadway Weekday Evening

							
Lane Group	WBL2	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations							
Traffic Volume (vph)	10	719	31	54	58	245	42
Future Volume (vph)	10	719	31	54	58	245	42
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00				0.98	
Frt		0.995				0.850	
Flt Protected		0.999			0.976		
Satd. Flow (prot)	0	1705	0	0	1717	1539	0
Flt Permitted		0.999			0.976		
Satd. Flow (perm)	0	1705	0	0	1717	1502	0
Satd. Flow (RTOR)		5				18	
Confl. Bikes (#/hr)			1				3
Peak Hour Factor	0.88	0.88	0.88	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	6%	0%	0%	6%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	20
Parking (#/hr)	0	1	0	0	1	0	0
Shared Lane Traffic (%)							
Turn Type	Perm	NA		Perm	NA	Perm	
Protected Phases		8			2		
Permitted Phases	8			2		2	
Detector Phase	8	8		2	2	2	
Switch Phase							
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	
Total Split (s)	61.0	61.0		29.0	29.0	29.0	
Total Split (%)	67.8%	67.8%		32.2%	32.2%	32.2%	
Maximum Green (s)	56.5	56.5		24.5	24.5	24.5	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	
Total Lost Time (s)		4.5			4.5	4.5	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	
Act Effct Green (s)		56.5			24.5	24.5	
Actuated g/C Ratio		0.63			0.27	0.27	
v/c Ratio		0.81			0.25	0.72	
Control Delay		19.5			27.4	38.9	
Queue Delay		0.0			0.0	0.2	
Total Delay		19.5			27.4	39.2	
LOS		B			C	D	
Approach Delay		19.5			35.9		
Approach LOS		B			D		

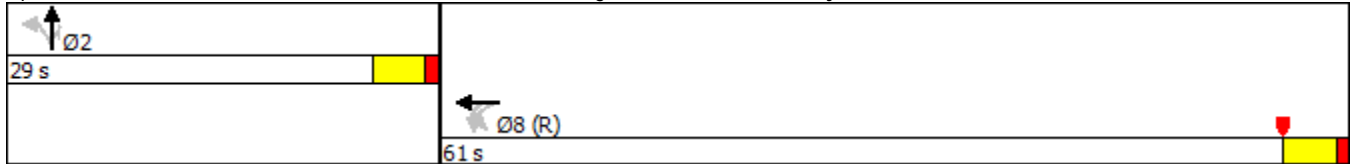
Intersection Summary

Lanes, Volumes, Timing 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 7: Hawthorne Street/5th Street & Bellingham Street & Broadway Weekday Evening

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 44 (49%), Referenced to phase 8:WBTL, Start of Yellow  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.81  
 Intersection Signal Delay: 24.8  
 Intersection Capacity Utilization 65.5%  
 Analysis Period (min) 15

Intersection LOS: C  
 ICU Level of Service C

Splits and Phases: 7: Hawthorne Street/5th Street & Bellingham Street & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 7: Hawthorne Street/5th Street & Bellingham Street & Broadway Weekday Evening

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	←	↑	↘	
Lane Group	WBT	NBT	NBR	
Lane Group Flow (vph)	863	118	302	
v/c Ratio	0.81	0.25	0.72	
Control Delay	19.5	27.4	38.9	
Queue Delay	0.0	0.0	0.2	
Total Delay	19.5	27.4	39.2	
Queue Length 50th (ft)	405	52	146	
Queue Length 95th (ft)	m356	98	#260	
Internal Link Dist (ft)	19	35		
Turn Bay Length (ft)				
Base Capacity (vph)	1072	467	421	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	7	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.81	0.25	0.73	

Intersection Summary

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- # 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.



2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 9: Washington Avenue & Chestnut Street Weekday Evening

	→	↘	↙	←	↗	↖
Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations			↘	↖		
Traffic Volume (vph)	0	0	362	362	0	0
Future Volume (vph)	0	0	362	362	0	0
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected			0.950	0.996		
Satd. Flow (prot)	0	0	1573	1663	0	0
Flt Permitted			0.950	0.996		
Satd. Flow (perm)	0	0	1573	1663	0	0
Confl. Peds. (#/hr)		149				25
Peak Hour Factor	0.25	0.25	0.92	0.92	0.25	0.25
Heavy Vehicles (%)	0%	0%	9%	8%	0%	0%
Parking (#/hr)	1	0			0	0
Shared Lane Traffic (%)			10%			
Sign Control	Free			Free	Free	

Intersection Summary

Control Type: Unsignalized  
 Intersection Capacity Utilization 41.9% ICU Level of Service A  
 Analysis Period (min) 15

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 10: Fay Square / City Hall Avenue/6th Street & Washington Avenue Weekday Evening

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	189	85	0	476	0	321	0	10	163
Future Volume (vph)	0	0	0	189	85	0	476	0	321	0	10	163
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
Ped Bike Factor								0.99				
Frt								0.946			0.873	
Flt Protected					0.967			0.971				
Satd. Flow (prot)	0	0	0	0	2044	0	0	1661	0	0	1493	0
Flt Permitted					0.967			0.712				
Satd. Flow (perm)	0	0	0	0	2044	0	0	1218	0	0	1493	0
Satd. Flow (RTOR)								88			177	
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.86	0.86	0.84	0.84	0.92	0.90	0.92	0.90	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	0%	6%	0%	5%	0%	3%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8			2			6		
Detector Phase				8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)				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	
Total Split (s)				23.0	23.0		67.0	67.0		67.0	67.0	
Total Split (%)				25.6%	25.6%		74.4%	74.4%		74.4%	74.4%	
Maximum Green (s)				18.5	18.5		62.5	62.5		62.5	62.5	
Yellow Time (s)				3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)				1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)					0.0			0.0			0.0	
Total Lost Time (s)					4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode				None	None		Min	Min		Min	Min	
Walk Time (s)				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	
Pedestrian Calls (#/hr)				0	0		0	0		0	0	
Act Effect Green (s)					17.2			62.8			62.8	
Actuated g/C Ratio					0.19			0.71			0.71	
v/c Ratio					0.83			1.00			0.17	
Control Delay					53.0			45.3			1.3	
Queue Delay					0.0			34.7			0.0	
Total Delay					53.0			80.0			1.3	
LOS					D			E			A	
Approach Delay					53.0			80.0			1.3	
Approach LOS					D			E			A	

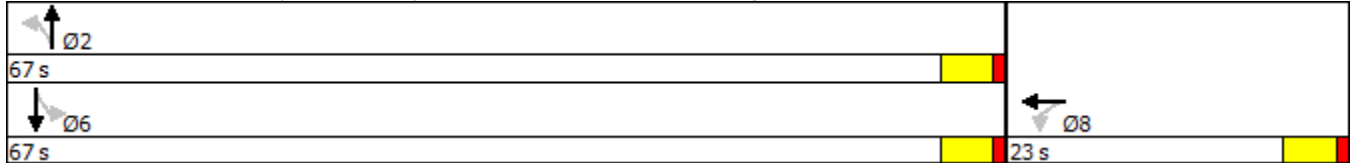
Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 89

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 10: Fay Square / City Hall Avenue/6th Street & Washington Avenue Weekday Evening

Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.00  
 Intersection Signal Delay: 63.1  
 Intersection LOS: E  
 Intersection Capacity Utilization 82.8%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 10: Fay Square / City Hall Avenue/6th Street & Washington Avenue



Queues 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 10: Fay Square / City Hall Avenue/6th Street & Washington Avenue Weekday Evening

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	←	↑	↓
Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	326	886	188
v/c Ratio	0.83	1.00	0.17
Control Delay	53.0	45.3	1.3
Queue Delay	0.0	34.7	0.0
Total Delay	53.0	80.0	1.3
Queue Length 50th (ft)	177	-456	2
Queue Length 95th (ft)	#265	#753	20
Internal Link Dist (ft)	824	258	326
Turn Bay Length (ft)			
Base Capacity (vph)	425	885	1105
Starvation Cap Reductn	0	92	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.77	1.12	0.17

Intersection Summary

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- ~ 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.

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 25: Marlborough Street/Fay Square / City Hall Avenue & Broadway Weekday Evening

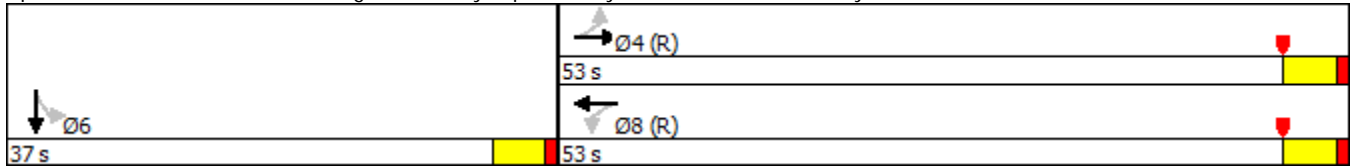
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	414	475	67	10	232	115	0	0	0	14	158	17
Future Volume (vph)	414	475	67	10	232	115	0	0	0	14	158	17
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.96							
Frt		0.981			0.957						0.988	
Flt Protected	0.950				0.999						0.996	
Satd. Flow (prot)	1752	1619	0	0	1760	0	0	0	0	0	1886	0
Flt Permitted	0.469				0.981						0.996	
Satd. Flow (perm)	865	1619	0	0	1729	0	0	0	0	0	1886	0
Satd. Flow (RTOR)		12			41						6	
Confl. Peds. (#/hr)			4			43			85			
Confl. Bikes (#/hr)			2			2						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.25	0.25	0.25	0.25	0.25	0.25
Heavy Vehicles (%)	3%	3%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	5	0	0	0	0	0	0
Parking (#/hr)		1	0	0	0	2	0	1		0	2	0
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Detector Phase	4	4		8	8					6	6	
Switch Phase												
Minimum Initial (s)	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	
Total Split (s)	53.0	53.0		53.0	53.0					37.0	37.0	
Total Split (%)	58.9%	58.9%		58.9%	58.9%					41.1%	41.1%	
Maximum Green (s)	48.5	48.5		48.5	48.5					32.5	32.5	
Yellow Time (s)	3.5	3.5		3.5	3.5					3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0					1.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0						0.0	
Total Lost Time (s)	4.5	4.5			4.5						4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0					3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max					Max	Max	
Walk Time (s)	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	
Pedestrian Calls (#/hr)	0	0		0	0					0	0	
Act Effct Green (s)	48.5	48.5			48.5						32.5	
Actuated g/C Ratio	0.54	0.54			0.54						0.36	
v/c Ratio	1.05	0.73			0.44						1.11	
Control Delay	67.6	17.1			13.0						96.2	
Queue Delay	0.0	1.1			0.0						1.9	
Total Delay	67.6	18.1			13.0						98.1	
LOS	E	B			B						F	
Approach Delay		39.6			13.0						98.1	
Approach LOS		D			B						F	

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 25: Marlborough Street/Fay Square / City Hall Avenue & Broadway Weekday Evening





Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 85.5 (95%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.11  
 Intersection Signal Delay: 53.9 Intersection LOS: D  
 Intersection Capacity Utilization 78.1% ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 25: Marlborough Street/Fay Square / City Hall Avenue & Broadway



Queues 2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 25: Marlborough Street/Fay Square / City Hall Avenue & Broadway Weekday Evening

				
Lane Group	EBL	EBT	WBT	SBT
Lane Group Flow (vph)	487	638	420	756
v/c Ratio	1.05	0.73	0.44	1.11
Control Delay	67.6	17.1	13.0	96.2
Queue Delay	0.0	1.1	0.0	1.9
Total Delay	67.6	18.1	13.0	98.1
Queue Length 50th (ft)	~297	163	121	~494
Queue Length 95th (ft)	m#351	m183	176	106
Internal Link Dist (ft)		78	1304	258
Turn Bay Length (ft)				
Base Capacity (vph)	466	877	950	684
Starvation Cap Reductn	0	83	0	157
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.05	0.80	0.44	1.43

Intersection Summary

- ~ 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.

2027 Future Year with Proposed Conceptual Design Conditions (1-Way)  
 30: Park Street & Broadway Weekday Evening

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations		↗		↖		
Traffic Volume (vph)	0	121	0	168	0	0
Future Volume (vph)	0	121	0	168	0	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865				
Flt Protected						
Satd. Flow (prot)	0	1552	0	1877	0	0
Flt Permitted						
Satd. Flow (perm)	0	1552	0	1877	0	0
Peak Hour Factor	0.92	0.92	0.78	0.78	0.25	0.25
Heavy Vehicles (%)	0%	20%	0%	8%	0%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary

Control Type: Unsignalized  
 Intersection Capacity Utilization 12.2% ICU Level of Service A  
 Analysis Period (min) 15