

APPENDIX I

**Intersection Capacity Analyses
Weekday AM Peak Hour
2021 Estimated Traffic Conditions**

Intersection Capacity Analysis

1: Washington St & Sherman St

08/22/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Volume (vph)	55	58	35	63	151	180	47	591	44	27	301	36
Future Volume (vph)	55	58	35	63	151	180	47	591	44	27	301	36
Confl. Peds. (#/hr)	3		1	1		3	6		9	9		9
Peak Hour Factor	0.74	0.74	0.74	0.85	0.85	0.85	0.99	0.99	0.99	0.79	0.79	0.79
Growth Factor	112%	112%	112%	112%	112%	112%	112%	112%	112%	112%	112%	112%
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	3%	3%	3%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	224	0	0	519	0	0	722	50	0	516	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6		6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0	10.0	10.0		10.0
Minimum Split (s)	23.5	23.5		23.5	23.5		23.5	23.5	23.5	23.5		23.5
Total Split (s)	25.0	25.0		25.0	25.0		35.0	35.0	35.0	35.0		35.0
Total Split (%)	30.5%	30.5%		30.5%	30.5%		42.7%	42.7%	42.7%	42.7%		42.7%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0		4.0
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5	1.5	1.5		1.5
Lost Time Adjust (s)		0.0			0.0			0.0	0.0			0.0
Total Lost Time (s)		5.5			5.5			5.5	5.5			5.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min	Min	Min		Min
v/c Ratio		0.71			1.02			0.90	0.07			0.97
Control Delay		35.8			70.3			34.5	2.8			54.5
Queue Delay		0.0			0.0			0.0	0.0			0.0
Total Delay		35.8			70.3			34.5	2.8			54.5
Queue Length 50th (ft)		63			167			211	0			159
Queue Length 95th (ft)		#169			#474			#653	14			#434
Internal Link Dist (ft)		308			288			525				178
Turn Bay Length (ft)									200			
Base Capacity (vph)		314			508			804	744			530
Starvation Cap Reductn		0			0			0	0			0
Spillback Cap Reductn		0			0			0	0			0
Storage Cap Reductn		0			0			0	0			0
Reduced v/c Ratio		0.71			1.02			0.90	0.07			0.97

Intersection Summary

Cycle Length: 82

Actuated Cycle Length: 64.4

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

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

Queue shown is maximum after two cycles.

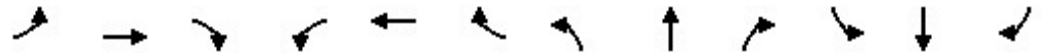
Splits and Phases: 1: Washington St & Sherman St



Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	27%
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Intersection Capacity Analysis
2: Washington St & Revere St/Driveway

08/22/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	53	0	58	0	0	0	58	614	6	1	333	44
Future Volume (vph)	53	0	58	0	0	0	58	614	6	1	333	44
Confl. Peds. (#/hr)	5		6	6		5	10		19	19		
Peak Hour Factor	0.79	0.79	0.79	0.25	0.25	0.25	0.92	0.92	0.92	0.75	0.75	0.75
Growth Factor	112%	112%	112%	112%	112%	112%	112%	112%	112%	112%	112%	112%
Heavy Vehicles (%)	11%	11%	11%	0%	0%	0%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	157	0	0	0	0	0	825	0	0	564	0
Turn Type	Perm	NA					Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		15.0	15.0		15.0	15.0	
Total Split (s)	12.0	12.0		12.0	12.0		59.0	59.0		59.0	59.0	
Total Split (%)	12.9%	12.9%		12.9%	12.9%		63.4%	63.4%		63.4%	63.4%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
v/c Ratio		0.69						0.74			0.47	
Control Delay		42.6						19.4			11.2	
Queue Delay		0.0						1.6			0.0	
Total Delay		42.6						21.0			11.2	
Queue Length 50th (ft)		53						210			103	
Queue Length 95th (ft)		#152						#643			203	
Internal Link Dist (ft)		383			46			533			146	
Turn Bay Length (ft)												
Base Capacity (vph)		227						1140			1235	
Starvation Cap Reductn		0						162			0	
Spillback Cap Reductn		0						0			0	
Storage Cap Reductn		0						0			0	
Reduced v/c Ratio		0.69						0.84			0.46	

Intersection Summary

Cycle Length: 93
 Actuated Cycle Length: 93
 Offset: 47 (51%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Intersection Capacity Analysis

2: Washington St & Revere St/Driveway

08/22/2022

Splits and Phases: 2: Washington St & Revere St/Driveway



Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	24%
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Intersection Capacity Analysis

3: Washington St & Bolivar St

08/22/2022

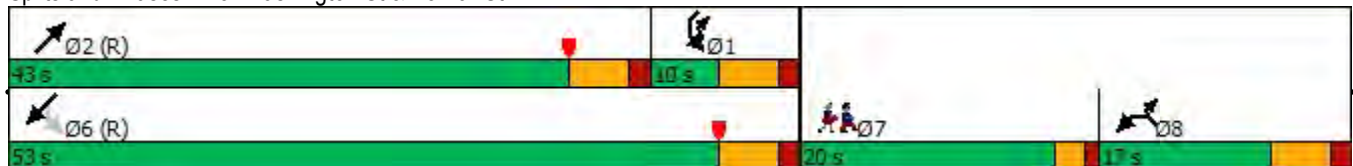


Lane Group	NWL	NWR	NET	NER	SWL	SWT	Ø7
Lane Configurations							
Traffic Volume (vph)	166	130	557	89	77	313	
Future Volume (vph)	166	130	557	89	77	313	
Confl. Peds. (#/hr)	4			5	5		
Peak Hour Factor	0.91	0.91	0.90	0.90	0.72	0.72	
Growth Factor	112%	112%	112%	112%	112%	112%	
Heavy Vehicles (%)	5%	5%	2%	2%	4%	4%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	204	160	804	0	120	487	
Turn Type	Prot	pt+ov	NA		pm+pt	NA	
Protected Phases	8	8 1	2		1	6	7
Permitted Phases					6		
Detector Phase	8	8 1	2		1	6	
Switch Phase							
Minimum Initial (s)	5.0		10.0		2.0	10.0	7.0
Minimum Split (s)	10.5		15.5		7.5	15.5	20.0
Total Split (s)	17.0		43.0		10.0	53.0	20.0
Total Split (%)	18.9%		47.8%		11.1%	58.9%	22%
Yellow Time (s)	4.0		4.0		4.0	4.0	2.0
All-Red Time (s)	1.5		1.5		1.5	1.5	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	5.5		5.5		5.5	5.5	
Lead/Lag	Lag		Lead		Lag		Lead
Lead-Lag Optimize?	Yes		Yes		Yes		Yes
Recall Mode	None		C-Min		Min	C-Min	None
v/c Ratio	0.68	0.29	0.74		0.36	0.38	
Control Delay	45.8	5.3	19.4		10.8	6.9	
Queue Delay	0.0	0.0	6.6		0.0	0.0	
Total Delay	45.8	5.3	26.0		10.8	6.9	
Queue Length 50th (ft)	109	0	306		19	98	
Queue Length 95th (ft)	175	42	514		32	123	
Internal Link Dist (ft)	291		172			533	
Turn Bay Length (ft)		150			200		
Base Capacity (vph)	304	506	1084		342	1282	
Starvation Cap Reductn	0	0	232		0	0	
Spillback Cap Reductn	0	0	0		0	0	
Storage Cap Reductn	0	0	0		0	0	
Reduced v/c Ratio	0.67	0.32	0.94		0.35	0.38	

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 22 (24%), Referenced to phase 2:NET and 6:SWTL, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

















Splits and Phases: 3: Washington St & Bolivar St



Intersection Capacity Analysis (HCM 2000 Unsignalized)

4: Washington St & Mechanic St/Wall St

08/22/2022

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	12	1	1	37	0	38	2	599	37	23	443	7
Future Volume (Veh/h)	12	1	1	37	0	38	2	599	37	23	443	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.58	0.58	0.58	0.85	0.85	0.85	0.93	0.93	0.93	0.82	0.82	0.82
Hourly flow rate (vph)	23	2	2	49	0	50	2	721	45	31	605	10
Pedestrians		16			6			3			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		2			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								205			252	
pX, platoon unblocked	0.74	0.74	0.89	0.74	0.74	0.69	0.89			0.69		
vC, conflicting volume	1488	1464	629	1432	1446	752	631			772		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1162	1129	525	1085	1105	418	527			447		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	78	99	100	63	100	88	100			96		
cM capacity (veh/h)	107	144	488	133	146	432	915			762		
Direction, Lane #	SE 1	NW 1	NE 1	SW 1								
Volume Total	27	99	768	646								
Volume Left	23	49	2	31								
Volume Right	2	50	45	10								
cSH	116	205	915	762								
Volume to Capacity	0.23	0.48	0.00	0.04								
Queue Length 95th (ft)	21	60	0	3								
Control Delay (s)	45.3	38.0	0.1	1.1								
Lane LOS	E	E	A	A								
Approach Delay (s)	45.3	38.0	0.1	1.1								
Approach LOS	E	E										
Intersection Summary												
Average Delay			3.7									
Intersection Capacity Utilization			58.2%		ICU Level of Service				B			
Analysis Period (min)			15									

Intersection Capacity Analysis
5: Church St & Washington St

08/22/2022



Lane Group	EBL	EBR	NEL	NET	SWT	SWR	Ø2	Ø3	Ø4	Ø5
Lane Configurations										
Traffic Volume (vph)	0	0	308	632	272	210				
Future Volume (vph)	0	0	308	632	272	210				
Confl. Peds. (#/hr)	2		7			7				
Peak Hour Factor	0.25	0.25	0.92	0.92	0.83	0.83				
Growth Factor	112%	112%	112%	112%	112%	112%				
Heavy Vehicles (%)	0%	0%	3%	3%	6%	6%				
Shared Lane Traffic (%)										
Lane Group Flow (vph)	0	0	375	769	650	0				
Turn Type			pm+pt	NA	NA					
Protected Phases			4 5	2 4 5	6		2	3	4	5
Permitted Phases			2 4 5							
Detector Phase			4 5	2 4 5	6					
Switch Phase										
Minimum Initial (s)				10.0	10.0	7.0	5.0	1.5		
Minimum Split (s)				15.5	15.5	21.0	24.0	7.0		
Total Split (s)				39.0	46.0	21.0	24.0	7.0		
Total Split (%)				42.9%	51%	23%	26%	8%		
Yellow Time (s)				4.0	4.0	2.0	4.0	4.0		
All-Red Time (s)				1.5	1.5	1.0	1.5	1.5		
Lost Time Adjust (s)				0.0						
Total Lost Time (s)				5.5						
Lead/Lag				Lead		Lead	Lag	Lag		
Lead-Lag Optimize?				Yes		Yes	Yes	Yes		
Recall Mode				C-Min	C-Min	None	None	None		
v/c Ratio			0.48	0.44	0.69					
Control Delay			5.7	3.0	21.5					
Queue Delay			0.2	0.1	1.8					
Total Delay			5.8	3.0	23.2					
Queue Length 50th (ft)			0	0	219					
Queue Length 95th (ft)			117	279	#513					
Internal Link Dist (ft)	599			58	125					
Turn Bay Length (ft)										
Base Capacity (vph)			812	1726	945					
Starvation Cap Reductn			66	134	154					
Spillback Cap Reductn			0	0	0					
Storage Cap Reductn			0	0	0					
Reduced v/c Ratio			0.50	0.48	0.82					

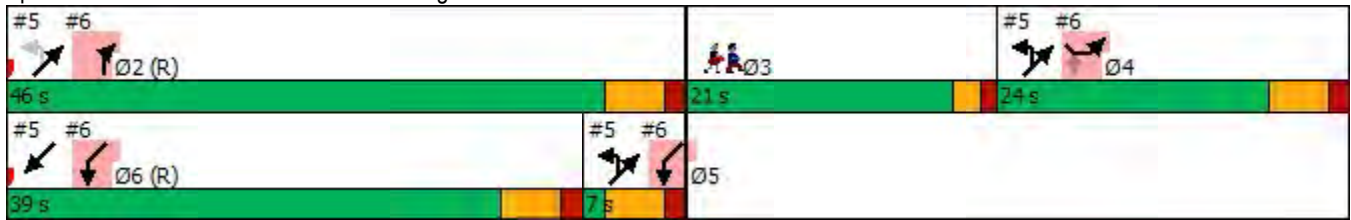
Intersection Summary

Cycle Length: 91
 Actuated Cycle Length: 91
 Offset: 0 (0%), Referenced to phase 2:NETL and 6:SWT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Intersection Capacity Analysis
 5: Church St & Washington St

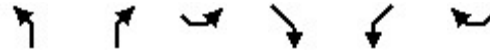
08/22/2022

Splits and Phases: 5: Church St & Washington St



Intersection Capacity Analysis
6: Washington St & Neponset St

08/22/2022



Lane Group	NBL	NBR	SEL	SER	SWL	SWR	Ø3	Ø5	Ø6
Lane Configurations		↗	↘	↘	↘				
Traffic Volume (vph)	0	740	163	251	285	0			
Future Volume (vph)	0	740	163	251	285	0			
Confl. Peds. (#/hr)	4			1		4			
Peak Hour Factor	0.89	0.89	0.84	0.84	0.75	0.75			
Growth Factor	112%	112%	112%	112%	112%	112%			
Heavy Vehicles (%)	2%	2%	5%	5%	2%	2%			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	0	931	217	335	426	0			
Turn Type		Prot	Prot	Perm	Prot				
Protected Phases		2	4		5 6		3	5	6
Permitted Phases				4					
Detector Phase		2	4	4	5 6				
Switch Phase									
Minimum Initial (s)		10.0	5.0	5.0			7.0	1.5	10.0
Minimum Split (s)		15.5	24.0	24.0			21.0	7.0	15.5
Total Split (s)		46.0	24.0	24.0			21.0	7.0	39.0
Total Split (%)		50.5%	26.4%	26.4%			23%	8%	43%
Yellow Time (s)		4.0	4.0	4.0			2.0	4.0	4.0
All-Red Time (s)		1.5	1.5	1.5			1.0	1.5	1.5
Lost Time Adjust (s)		0.0	0.0	0.0					
Total Lost Time (s)		5.5	5.5	5.5					
Lead/Lag			Lag	Lag			Lead	Lag	Lead
Lead-Lag Optimize?			Yes	Yes			Yes	Yes	Yes
Recall Mode		C-Min	None	None			None	None	C-Min
v/c Ratio		0.73	0.65	0.60	0.38				
Control Delay		8.5	42.7	8.5	11.5				
Queue Delay		0.0	0.0	0.0	1.0				
Total Delay		8.5	42.7	8.5	12.5				
Queue Length 50th (ft)		54	112	0	99				
Queue Length 95th (ft)		#383	175	52	204				
Internal Link Dist (ft)	658		508		153				
Turn Bay Length (ft)									
Base Capacity (vph)		1271	375	590	1129				
Starvation Cap Reductn		0	0	0	445				
Spillback Cap Reductn		0	0	0	0				
Storage Cap Reductn		0	0	0	0				
Reduced v/c Ratio		0.73	0.58	0.57	0.62				

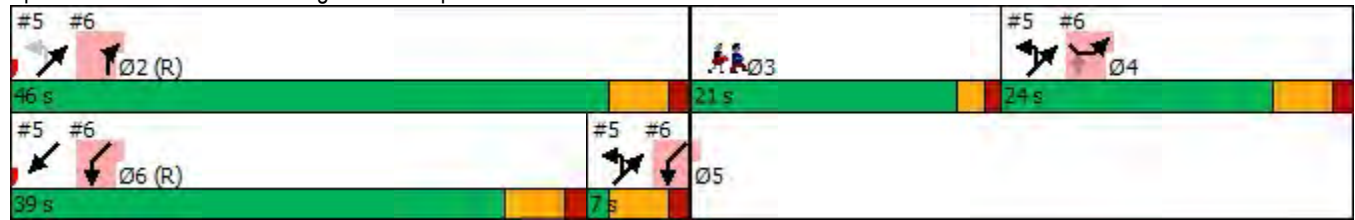
Intersection Summary

Cycle Length: 91
 Actuated Cycle Length: 91
 Offset: 0 (0%), Referenced to phase 2:NETL and 6:SWT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Intersection Capacity Analysis
 6: Washington St & Neponset St

08/22/2022

Splits and Phases: 6: Washington St & Neponset St



Intersection Capacity Analysis (HCM 2000 Unsignalized)

7: Washington St & High St

08/22/2022





















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	45	66	74	696	428	39
Future Volume (Veh/h)	45	66	74	696	428	39
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	54	79	95	896	551	50
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1666	580	605			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1666	580	605			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	43	85	90			
cM capacity (veh/h)	95	512	969			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	133	95	896	601		
Volume Left	54	95	0	0		
Volume Right	79	0	0	50		
cSH	185	969	1700	1700		
Volume to Capacity	0.72	0.10	0.53	0.35		
Queue Length 95th (ft)	113	8	0	0		
Control Delay (s)	62.9	9.1	0.0	0.0		
Lane LOS	F	A				
Approach Delay (s)	62.9	0.9		0.0		
Approach LOS	F					
Intersection Summary						
Average Delay			5.3			
Intersection Capacity Utilization			55.0%	ICU Level of Service	B	
Analysis Period (min)			15			

Intersection Capacity Analysis (HCM 2000 Unsignalized)

8: Washington St & Shoppes Village Driveway

















08/22/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	1	10	10	0	51	4	668	22	110	416	25
Future Volume (Veh/h)	5	1	10	10	0	51	4	668	22	110	416	25
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.57	0.57	0.57	0.69	0.69	0.69	0.94	0.94	0.94	0.86	0.86	0.86
Hourly flow rate (vph)	10	2	20	16	0	83	5	796	26	143	542	33
Pedestrians					1							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					3.5							
Percent Blockage					0							
Right turn flare (veh)												
Median type								TWLTL				None
Median storage (veh)								2				
Upstream signal (ft)								872				
pX, platoon unblocked	0.81	0.81		0.81	0.81	0.81				0.81		
vC, conflicting volume	1746	1678	558	1669	1681	810	575			823		
vC1, stage 1 conf vol	844	844		820	820							
vC2, stage 2 conf vol	902	833		849	861							
vCu, unblocked vol	1803	1718	558	1708	1723	652	575			668		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	99	96	92	100	78	100			81		
cM capacity (veh/h)	102	185	533	212	229	376	1003			745		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2						
Volume Total	32	16	83	827	143	575						
Volume Left	10	16	0	5	143	0						
Volume Right	20	0	83	26	0	33						
cSH	218	212	376	1003	745	1700						
Volume to Capacity	0.15	0.08	0.22	0.00	0.19	0.34						
Queue Length 95th (ft)	13	6	21	0	18	0						
Control Delay (s)	24.3	23.4	17.3	0.1	11.0	0.0						
Lane LOS	C	C	C	A	B							
Approach Delay (s)	24.3	18.2		0.1	2.2							
Approach LOS	C	C										
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization			83.5%		ICU Level of Service					E		
Analysis Period (min)			15									

Intersection Capacity Analysis (HCM 2000 Unsignalized)

9: Washington St & Plaza Driveway

















08/22/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	0	29	21	0	25	18	649	48	19	414	1
Future Volume (Veh/h)	24	0	29	21	0	25	18	649	48	19	414	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.62	0.62	0.62	0.77	0.77	0.77	0.94	0.94	0.94	0.96	0.96	0.96
Hourly flow rate (vph)	43	0	52	31	0	36	21	773	57	22	483	1
Pedestrians		1			1							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		3.5			3.5							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (ft)								624				
pX, platoon unblocked	0.79	0.79		0.79	0.79	0.79				0.79		
vC, conflicting volume	1408	1402	484	1424	1374	802	485			831		
vC1, stage 1 conf vol	528	528		844	844							
vC2, stage 2 conf vol	880	873		580	529							
vCu, unblocked vol	1384	1376	484	1404	1340	619	485			655		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	82	100	91	89	100	91	98			97		
cM capacity (veh/h)	245	278	580	272	298	386	1082			734		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	95	67	851	506								
Volume Left	43	31	21	22								
Volume Right	52	36	57	1								
cSH	358	323	1082	734								
Volume to Capacity	0.27	0.21	0.02	0.03								
Queue Length 95th (ft)	26	19	1	2								
Control Delay (s)	18.6	19.0	0.5	0.8								
Lane LOS	C	C	A	A								
Approach Delay (s)	18.6	19.0	0.5	0.8								
Approach LOS	C	C										
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utilization			59.8%		ICU Level of Service					B		
Analysis Period (min)			15									

Intersection Capacity Analysis (HCM 2000 Unsignalized)

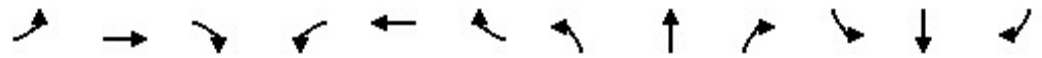
10: Washington St & Cobb Corner

08/22/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	1	3	19	2	64	9	677	71	61	371	7
Future Volume (Veh/h)	16	1	3	19	2	64	9	677	71	61	371	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.71	0.71	0.71	0.84	0.84	0.84	0.87	0.87	0.87	0.88	0.88	0.88
Hourly flow rate (vph)	25	2	5	25	3	85	12	872	91	78	472	9
Pedestrians		1			1							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		3.5			3.5							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (ft)								423				
pX, platoon unblocked	0.77	0.77		0.77	0.77	0.77				0.77		
vC, conflicting volume	1662	1622	478	1581	1580	918	482			964		
vC1, stage 1 conf vol	634	634		942	942							
vC2, stage 2 conf vol	1028	988		638	638							
vCu, unblocked vol	1709	1657	478	1605	1604	749	482			808		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	76	99	99	89	99	73	99			88		
cM capacity (veh/h)	106	194	591	237	249	320	1080			632		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	32	113	975	559								
Volume Left	25	25	12	78								
Volume Right	5	85	91	9								
cSH	126	295	1080	632								
Volume to Capacity	0.25	0.38	0.01	0.12								
Queue Length 95th (ft)	24	43	1	10								
Control Delay (s)	43.0	24.6	0.3	3.3								
Lane LOS	E	C	A	A								
Approach Delay (s)	43.0	24.6	0.3	3.3								
Approach LOS	E	C										
Intersection Summary												
Average Delay			3.8									
Intersection Capacity Utilization			78.7%		ICU Level of Service					D		
Analysis Period (min)			15									

Intersection Capacity Analysis
 11: Bay Rd/Washington St & N Main St/Sharon St

08/22/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		←↑			←↑			←↑		←↑	←↑	←↑
Traffic Volume (vph)	155	396	26	16	351	169	70	483	29	147	125	89
Future Volume (vph)	155	396	26	16	351	169	70	483	29	147	125	89
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.88	0.88	0.88	0.89	0.89	0.89
Growth Factor	112%	112%	112%	112%	112%	112%	112%	112%	112%	112%	112%	112%
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	2%	2%	2%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	688	0	0	638	0	0	741	0	185	269	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases	7	4			8			6		5	2	
Permitted Phases	4			8			6			2		
Detector Phase	7	4		8	8		6	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	15.0		15.0	15.0		15.0	15.0		6.0	15.0	
Minimum Split (s)	11.0	21.0		21.0	21.0		21.0	21.0		11.0	21.0	
Total Split (s)	20.0	56.0		36.0	36.0		26.0	26.0		20.0	46.0	
Total Split (%)	15.6%	43.8%		28.1%	28.1%		20.3%	20.3%		15.6%	35.9%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	2.0		2.0	2.0		2.0	2.0		1.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		6.0			6.0			6.0		5.0	6.0	
Lead/Lag	Lead			Lag	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes		
Recall Mode	None	None		None	None		None	None		None	None	
v/c Ratio		0.81			0.51			1.09		0.56	0.36	
Control Delay		34.2			21.3			97.5		28.7	21.8	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		34.2			21.3			97.5		28.7	21.8	
Queue Length 50th (ft)		170			122			~257		63	87	
Queue Length 95th (ft)		355			252			#569		#192	243	
Internal Link Dist (ft)		217			198			180			132	
Turn Bay Length (ft)												
Base Capacity (vph)		1183			1297			681		366	785	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.58			0.49			1.09		0.51	0.34	

Intersection Summary

Cycle Length: 128
 Actuated Cycle Length: 93
 Natural Cycle: 120
 Control Type: Actuated-Uncoordinated
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Intersection Capacity Analysis

11: Bay Rd/Washington St & N Main St/Sharon St

08/22/2022

Splits and Phases: 11: Bay Rd/Washington St & N Main St/Sharon St



















Lane Group	09
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	20%
Yellow Time (s)	2.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Intersection Capacity Analysis (HCM 2000 Unsignalized)

12: Washington St & Starbucks Driveway

















08/22/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	3	32	27	2	22	72	705	42	7	352	18
Future Volume (Veh/h)	4	3	32	27	2	22	72	705	42	7	352	18
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.85	0.85	0.85	0.92	0.92	0.92	0.93	0.93	0.93
Hourly flow rate (vph)	6	4	44	36	3	29	88	858	51	8	424	22
Pedestrians		3			3							
Lane Width (ft)		12.0			12.0							
Walking Speed (ft/s)		3.5			3.5							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh											2	
Upstream signal (ft)								212				
pX, platoon unblocked	0.80	0.80		0.80	0.80	0.80				0.80		
vC, conflicting volume	1090	1542	226	1336	1528	458	449			912		
vC1, stage 1 conf vol	454	454		1062	1062							
vC2, stage 2 conf vol	636	1088		274	465							
vCu, unblocked vol	620	1184	226	928	1166	0	449			399		
tC, single (s)	7.7	6.7	7.1	7.5	6.5	6.9	4.1			4.2		
tC, 2 stage (s)	6.7	5.7		6.5	5.5							
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	94	89	99	97	92			99		
cM capacity (veh/h)	461	299	757	314	311	873	1105			908		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	54	68	517	480	220	234						
Volume Left	6	36	88	0	8	0						
Volume Right	44	29	0	51	0	22						
cSH	639	432	1105	1700	908	1700						
Volume to Capacity	0.08	0.16	0.08	0.28	0.01	0.14						
Queue Length 95th (ft)	7	14	6	0	1	0						
Control Delay (s)	11.2	14.9	2.2	0.0	0.4	0.0						
Lane LOS	B	B	A		A							
Approach Delay (s)	11.2	14.9	1.1		0.2							
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.8									
Intersection Capacity Utilization			57.4%		ICU Level of Service				B			
Analysis Period (min)			15									

Intersection Capacity Analysis (HCM 2000 Unsignalized)

13: Sharon St & Cobb Corner Dr

08/22/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	457	3	34	518	50	19	8	32	27	3	24
Future Volume (Veh/h)	4	457	3	34	518	50	19	8	32	27	3	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.82	0.82	0.82	0.80	0.80	0.80
Hourly flow rate (vph)	5	550	4	42	645	62	26	11	44	38	4	34
Pedestrians					3			3			5	
Lane Width (ft)					16.0			12.0			12.0	
Walking Speed (ft/s)					3.5			3.5			3.5	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		278										
pX, platoon unblocked												
vC, conflicting volume	712			557			1361	1361	283	1102	1332	681
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	712			557			1361	1361	283	1102	1332	681
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			71	92	94	72	97	91
cM capacity (veh/h)	853			986			91	139	709	137	142	386
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1							
Volume Total	280	279	749	81	76							
Volume Left	5	0	42	26	38							
Volume Right	0	4	62	44	34							
cSH	853	1700	986	190	193							
Volume to Capacity	0.01	0.16	0.04	0.43	0.39							
Queue Length 95th (ft)	0	0	3	49	44							
Control Delay (s)	0.2	0.0	1.1	37.4	35.3							
Lane LOS	A		A	E	E							
Approach Delay (s)	0.1		1.1	37.4	35.3							
Approach LOS				E	E							
Intersection Summary												
Average Delay			4.5									
Intersection Capacity Utilization			66.1%		ICU Level of Service				C			
Analysis Period (min)			15									

Intersection Capacity Analysis (HCM 2000 Unsignalized)

14: Sharon St & Village Shoppes Dr

08/22/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	↕
Traffic Volume (veh/h)	20	481	13	2	571	66	0	0	0	40	2	29
Future Volume (Veh/h)	20	481	13	2	571	66	0	0	0	40	2	29
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.85	0.85	0.85	0.92	0.92	0.92	0.78	0.78	0.78
Hourly flow rate (vph)	23	561	15	3	752	87	0	0	0	57	3	42
Pedestrians												3
Lane Width (ft)												12.0
Walking Speed (ft/s)												3.5
Percent Blockage												0
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		591										
pX, platoon unblocked				0.85			0.85	0.85	0.85	0.85	0.85	0.85
vC, conflicting volume	842			576			1460	1462	568	1419	1426	798
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	842			408			1452	1456	399	1404	1413	798
tC, single (s)	4.2			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	100	100	41	97	89
cM capacity (veh/h)	774			956			78	106	551	97	113	386
Direction, Lane #	EB 1	WB 1	SB 1	SB 2								
Volume Total	599	842	60	42								
Volume Left	23	3	57	0								
Volume Right	15	87	0	42								
cSH	774	956	97	386								
Volume to Capacity	0.03	0.00	0.62	0.11								
Queue Length 95th (ft)	2	0	74	9								
Control Delay (s)	0.8	0.1	88.9	15.5								
Lane LOS	A	A	F	C								
Approach Delay (s)	0.8	0.1	58.6									
Approach LOS			F									
Intersection Summary												
Average Delay			4.2									
Intersection Capacity Utilization			56.0%		ICU Level of Service					B		
Analysis Period (min)			15									