

Appendix – Transportation

Vehicle, Pedestrian, and Bicycle Counts

Seasonal Adjustment Factors

Trip Generation

Synchro Intersection Level of Service Reports

- Existing (2019) Condition
- No-Build (2026) Condition
- Build (2026) Condition

Vehicle, Pedestrian, and Bicycle Counts

Client: Melissa Restrepo
 Project #: 316_C003_HSH
 BTM #: Location 1A
 Location: Brighton, MA
 Street 1: Commonwealth Avenue
 Street 2: Warren Street/Kelton Street
 Count Date: 1/23/2019
 Day of Week: Wednesday
 Weather: Cloudy, 40°F



PASSENGER CARS & HEAVY VEHICLES COMBINED

Start Time	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Warren Street Eastbound			Kelton Street Westbound				
	U-Turn	Left	Thru	Right	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	U-Turn	Thru	Right	Right [C]	U-Turn	Left	Left [C]	Thru
7:00 AM	0	5	0	0	0	31	1	8	0	21	6	14	0	42	12	2	0	4	1	83
7:15 AM	0	5	0	0	0	33	0	11	1	23	8	16	0	45	14	3	0	5	1	91
7:30 AM	0	6	0	0	0	36	1	13	0	26	7	15	0	49	11	4	0	7	0	102
7:45 AM	0	7	0	0	1	39	2	14	0	30	6	14	0	47	9	3	0	6	2	115
8:00 AM	0	8	0	0	1	42	1	16	0	27	4	16	0	45	8	4	0	4	1	139
8:15 AM	0	6	0	0	0	43	2	15	0	24	2	17	0	43	6	3	0	5	2	132
8:30 AM	0	5	0	0	1	40	0	14	1	23	2	18	0	45	7	3	0	3	2	127
8:45 AM	0	4	0	0	0	38	1	12	0	22	1	15	0	46	5	2	0	3	1	122

Start Time	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Warren Street Eastbound			Kelton Street Westbound				
	U-Turn	Left	Thru	Right	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	U-Turn	Thru	Right	Right [C]	U-Turn	Left	Left [C]	Thru
4:00 PM	0	3	0	0	0	87	1	18	0	37	9	18	0	41	7	4	0	3	1	73
4:15 PM	0	4	0	0	1	82	1	19	0	40	10	21	0	46	8	6	0	5	1	79
4:30 PM	0	5	0	0	1	84	2	20	0	39	12	17	0	47	12	5	0	4	2	82
4:45 PM	0	4	0	0	2	85	2	21	1	41	11	15	0	48	19	2	0	3	3	87
5:00 PM	0	6	0	0	4	83	1	23	1	42	13	18	0	49	14	3	0	2	2	91
5:15 PM	0	5	0	0	1	86	3	22	2	39	12	20	0	52	11	3	0	3	4	89
5:30 PM	0	4	0	0	2	81	2	21	1	37	11	19	0	48	12	4	0	3	2	93
5:45 PM	0	4	0	0	2	80	2	20	0	38	10	17	0	46	10	2	0	4	3	91

AM PEAK HOUR 7:45 AM to 8:45 AM	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Warren Street Eastbound			Kelton Street Westbound				
	U-Turn	Left	Thru	Right	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	U-Turn	Thru	Right	Right [C]	U-Turn	Left	Left [C]	Thru
	0	26	0	0	3	164	5	59	1	104	14	65	0	180	30	13	0	18	7	513
PHF	0.81				0.96				0.92				0.94			0.93				
HV %	0.0%	3.8%	0.0%	0.0%	0.0%	3.0%	0.0%	1.7%	0.0%	0.0%	7.1%	1.5%	0.0%	2.8%	3.3%	0.0%	0.0%	5.6%	14.3%	1.0%

PM PEAK HOUR 4:45 PM to 5:45 PM	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Warren Street Eastbound			Kelton Street Westbound				
	U-Turn	Left	Thru	Right	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	U-Turn	Thru	Right	Right [C]	U-Turn	Left	Left [C]	Thru
	0	19	0	0	9	335	8	87	5	159	47	72	0	197	56	12	0	11	11	360
PHF	0.79				0.98				0.96				0.96			0.97				
HV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%

Note:
 [C] denotes Carriage Road movement.

Client: Melissa Restrepo
 Project #: 316_C003_HSH
 BTM #: Location 1A
 Location: Brighton, MA
 Street 1: Commonwealth Avenue
 Street 2: Warren Street/Kelton Street
 Count Date: 1/23/2019
 Day of Week: Wednesday
 Weather: Cloudy, 40°F



HEAVY VEHICLES

Start Time	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Warren Street Eastbound			Kelton Street Westbound				
	U-Turn	Left	Thru	Right	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	U-Turn	Thru	Right	Right [C]	U-Turn	Left	Left [C]	Thru
7:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	2
7:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	2	0	1	0	0	0	0	0	1	0	0	0	0	0	1
7:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	2	1	0	0	0	1	2
8:00 AM	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	1	0	1
8:15 AM	0	0	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Start Time	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Warren Street Eastbound			Kelton Street Westbound				
	U-Turn	Left	Thru	Right	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	U-Turn	Thru	Right	Right [C]	U-Turn	Left	Left [C]	Thru
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	2	0	1	0	0	0	0	0	1	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:30 AM to 8:30 AM PHF	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Warren Street Eastbound			Kelton Street Westbound				
	U-Turn	Left	Thru	Right	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	U-Turn	Thru	Right	Right [C]	U-Turn	Left	Left [C]	Thru
	0	1	0	0	0	6	0	2	0	0	1	1	0	4	1	0	0	1	1	4
	0.25				0.67				0.50				0.42			0.50				

PM PEAK HOUR 4:00 PM to 5:00 PM PHF	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Warren Street Eastbound			Kelton Street Westbound				
	U-Turn	Left	Thru	Right	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	U-Turn	Thru	Right	Right [C]	U-Turn	Left	Left [C]	Thru
	0	0	0	0	0	4	0	1	0	0	0	0	0	3	0	0	0	0	0	2
	0.00				0.42				0.00				0.75			0.50				

Client: Melissa Restrepo
 Project #: 316_C003_HSH
 BTD #: Location 1A
 Location: Brighton, MA
 Street 1: Commonwealth Avenue
 Street 2: Warren Street/Kelton Street
 Count Date: 1/23/2019
 Day of Week: Wednesday
 Weather: Cloudy, 40°F



PEDESTRIANS & BICYCLES

Start Time	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Warren Street Eastbound				Kelton Street Westbound					
	Left	Thru	Right	PED	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Thru	Right	Right [C]	PED	Left	Left [C]	Thru	PED		
7:00 AM	0	0	0	25				5				5			0	0	0	19			0	0
7:15 AM	0	0	0	28				8				8			1	0	0	21			0	0
7:30 AM	0	0	0	34				9				9			1	0	0	22			0	0
7:45 AM	0	0	0	30				13				13			1	0	0	17			1	1
8:00 AM	0	0	0	25				10				10			0	0	0	19			0	0
8:15 AM	0	1	0	22				11				11			0	0	0	16			0	0
8:30 AM	0	0	0	19				12				12			2	0	0	12			0	0
8:45 AM	0	0	0	21				10				10			0	0	0	13			0	0

Start Time	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Warren Street Eastbound				Kelton Street Westbound					
	Left	Thru	Right	PED	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Thru	Right	Right [C]	PED	Left	Left [C]	Thru	PED		
4:00 PM	0	0	0	16				10				10			1	0	0	7			0	0
4:15 PM	0	0	0	20				7				7			0	0	0	10			0	0
4:30 PM	0	0	0	18				8				8			0	0	0	8			0	0
4:45 PM	0	0	0	19				6				6			1	0	0	11			0	0
5:00 PM	0	0	0	17				7				7			0	0	0	14			0	0
5:15 PM	0	0	0	15				8				8			0	0	0	16			0	0
5:30 PM	0	0	0	16				9				9			0	0	0	21			0	0
5:45 PM	0	0	0	14				6				6			0	0	0	18			0	0

AM PEAK HOUR 7:45 AM to 8:45 AM	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Warren Street Eastbound				Kelton Street Westbound							
	Left	Thru	Right	PED	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Thru	Right	Right [C]	PED	Left	Left [C]	Thru	PED				
	0	1	0	96				46				46				3				64				1

PM PEAK HOUR 4:45 PM to 5:45 PM	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Warren Street Eastbound				Kelton Street Westbound							
	Left	Thru	Right	PED	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Thru	Right	Right [C]	PED	Left	Left [C]	Thru	PED				
	0	0	0	67				30				30				1				62				0

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Client: Melissa Restrepo
 Project #: 316_C003_HSH
 BTD #: Location 1B
 Location: Brighton, MA
 Street 1: Commonwealth Avenue
 Street 2: Warren Street/Kelton Street
 Count Date: 1/23/2019
 Day of Week: Wednesday
 Weather: Cloudy, 40°F

BOSTON TRAFFIC DATA

PO BOX 1723, Framingham, MA 01701
 Office: 978-746-1259
 DataRequest@BostonTrafficData.com
 www.BostonTrafficData.com

PASSENGER CARS & HEAVY VEHICLES COMBINED

Start Time	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				U-Turn	Warren Street Eastbound			U-Turn	Kelton Street Westbound		
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right		Left	Left [C]	Thru		Thru	Right	Right [C]
7:00 AM	57	113	1	1	0	2	7	1	0	11	1	30	0	31	0	1
7:15 AM	63	117	1	2	0	0	4	2	0	13	2	31	0	34	1	2
7:30 AM	69	131	1	2	1	1	2	5	0	14	3	32	0	39	2	3
7:45 AM	76	142	2	3	1	0	3	4	0	15	2	31	0	46	2	2
8:00 AM	94	141	1	4	0	1	3	3	0	13	3	30	0	50	1	2
8:15 AM	92	138	0	2	0	1	4	2	0	10	2	31	0	47	2	3
8:30 AM	87	146	2	2	0	0	4	1	0	12	2	33	0	45	3	3
8:45 AM	83	151	1	3	1	0	3	1	0	11	1	34	0	42	2	2

Start Time	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				U-Turn	Warren Street Eastbound			U-Turn	Kelton Street Westbound		
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right		Left	Left [C]	Thru		Thru	Right	Right [C]
4:00 PM	34	73	1	2	1	1	2	1	0	8	2	31	0	42	1	3
4:15 PM	38	77	2	1	0	0	3	2	0	9	5	33	0	47	1	4
4:30 PM	37	79	1	3	0	1	1	2	0	8	3	37	0	51	0	4
4:45 PM	39	81	1	6	1	0	1	1	0	9	1	41	0	53	2	3
5:00 PM	38	87	2	4	0	1	0	2	0	13	2	39	0	57	1	2
5:15 PM	40	93	1	3	1	0	3	3	0	17	1	37	0	55	2	3
5:30 PM	39	86	3	3	1	0	4	1	0	14	3	34	0	58	1	2
5:45 PM	42	80	1	4	0	0	2	2	0	12	4	32	0	56	1	2

AM PEAK HOUR 8:00 AM to 9:00 AM	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				U-Turn	Warren Street Eastbound			U-Turn	Kelton Street Westbound		
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right		Left	Left [C]	Thru		Thru	Right	Right [C]
	356	576	4	11	1	2	14	7	0	46	8	128	0	184	8	10
PHF	0.99				0.86					0.97				0.95		
HV %	0.8%	0.7%	0.0%	9.1%	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%	0.0%	1.6%	0.0%	0.5%	0.0%	0.0%

PM PEAK HOUR 4:45 PM to 5:45 PM	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				U-Turn	Warren Street Eastbound			U-Turn	Kelton Street Westbound		
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right		Left	Left [C]	Thru		Thru	Right	Right [C]
	156	347	7	16	3	1	8	7	0	53	7	151	0	223	6	10
PHF	0.96				0.68					0.96				0.98		
HV %	0.6%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	0.0%	0.7%	0.0%	0.4%	0.0%	0.0%

Note:

[C] denotes Carriage Road movement.

Client: Melissa Restrepo
 Project #: 316_C003_HSH
 BTD #: Location 1B
 Location: Brighton, MA
 Street 1: Commonwealth Avenue
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 Count Date: 1/23/2019
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 Weather: Cloudy, 40°F

BOSTON TRAFFIC DATA

PO BOX 1723, Framingham, MA 01701
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 DataRequest@BostonTrafficData.com
 www.BostonTrafficData.com

HEAVY VEHICLES

Start Time	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				U-Turn	Warren Street Eastbound			Kelton Street Westbound			
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right		Left	Left [C]	Thru	U-Turn	Thru	Right	Right [C]
7:00 AM	2	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
7:45 AM	1	2	0	0	0	0	0	0	0	1	0	1	0	1	0	0
8:00 AM	1	2	0	1	0	0	0	0	0	0	0	0	0	1	0	0
8:15 AM	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
8:30 AM	2	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Start Time	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				U-Turn	Warren Street Eastbound			Kelton Street Westbound			
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right		Left	Left [C]	Thru	U-Turn	Thru	Right	Right [C]
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:15 PM	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
4:45 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:45 AM to 8:45 AM PHF	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				U-Turn	Warren Street Eastbound			Kelton Street Westbound			
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right		Left	Left [C]	Thru	U-Turn	Thru	Right	Right [C]
	4	5	0	1	0	0	0	0	0	2	0	3	0	2	0	0
	0.63				0.00					0.63			0.50			

PM PEAK HOUR 4:00 PM to 5:00 PM PHF	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				U-Turn	Warren Street Eastbound			Kelton Street Westbound			
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right		Left	Left [C]	Thru	U-Turn	Thru	Right	Right [C]
	1	2	0	0	0	0	0	0	0	1	0	2	0	1	0	1
	0.38				0.00					0.75			0.25			

Client: Melissa Restrepo
 Project #: 316_C003_HSH
 BTM #: Location 1B
 Location: Brighton, MA
 Street 1: Commonwealth Avenue
 Street 2: Warren Street/Kelton Street
 Count Date: 1/23/2019
 Day of Week: Wednesday
 Weather: Cloudy, 40°F



PEDESTRIANS & BICYCLES

Start Time	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				Warren Street Eastbound				Kelton Street Westbound			
	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Left	Left [C]	Thru	PED	Thru	Right	Right [C]	PED
7:00 AM	0	0	0	4	0	0	0	4	0	0	0	0	0	0	0	3
7:15 AM	0	0	0	15	0	0	0	15	0	0	1	0	0	0	0	9
7:30 AM	0	0	0	18	0	1	0	18	0	0	1	0	1	0	1	11
7:45 AM	0	0	0	14	0	1	0	14	0	0	1	1	1	0	0	10
8:00 AM	0	0	0	12	1	0	0	12	0	0	0	0	1	0	0	9
8:15 AM	0	0	0	16	0	1	0	16	0	0	0	0	0	0	0	13
8:30 AM	0	0	0	21	0	0	0	21	1	0	1	1	0	0	0	17
8:45 AM	0	0	0	17	0	2	0	17	0	0	0	0	0	0	0	14

Start Time	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				Warren Street Eastbound				Kelton Street Westbound			
	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Left	Left [C]	Thru	PED	Thru	Right	Right [C]	PED
4:00 PM	0	0	0	9	0	0	0	9	0	0	1	0	0	0	0	4
4:15 PM	0	0	0	10	0	0	0	10	0	0	0	1	1	0	0	6
4:30 PM	0	0	0	12	0	1	0	12	0	0	0	0	0	0	1	5
4:45 PM	0	0	0	11	0	0	0	11	0	0	1	0	1	0	0	7
5:00 PM	0	0	0	9	0	0	0	9	0	0	0	0	2	0	0	4
5:15 PM	0	0	0	10	0	1	0	10	0	0	0	0	0	0	0	6
5:30 PM	0	0	0	7	0	0	0	7	0	0	0	0	0	0	0	4
5:45 PM	0	0	0	8	0	0	0	8	0	0	0	0	0	0	0	5

AM PEAK HOUR ¹ 8:00 AM to 9:00 AM	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				Warren Street Eastbound				Kelton Street Westbound			
	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Left	Left [C]	Thru	PED	Thru	Right	Right [C]	PED
	0	0	0	66	1	3	0	66	1	0	1	1	1	0	0	53

PM PEAK HOUR ¹ 4:45 PM to 5:45 PM	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				Warren Street Eastbound				Kelton Street Westbound			
	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Left	Left [C]	Thru	PED	Thru	Right	Right [C]	PED
	0	0	0	37	0	1	0	37	0	0	1	0	3	0	0	21

¹ Peak hours corresponds to vehicular peak hours.

Client: Melissa Restrepo
 Project #: 316_C003_HSH
 BTD #: Location 2
 Location: Brighton, MA
 Street 1: Commonwealth Avenue
 Street 2: Fidelis Way
 Count Date: 1/23/2019
 Day of Week: Wednesday
 Weather: Cloudy, 40°F



PASSENGER CARS & HEAVY VEHICLES COMBINED

Start Time	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Fidelis Way Eastbound			
	U-Turn [C]	Left	Thru [C]	U-Turn	Thru	Thru [C]	Right	U-Turn [C]	U-Turn [C]	Thru	Thru [C]	Right	U-Turn	Left [C]	Right	Right [C]
7:00 AM	0	0	0	1	62	6	0	0	0	3	3	2	0	1	8	2
7:15 AM	0	1	1	0	67	5	3	0	0	4	5	4	0	2	11	3
7:30 AM	0	0	0	0	70	4	6	0	0	4	3	2	0	1	6	4
7:45 AM	1	2	2	1	72	7	4	1	0	3	2	3	0	0	4	5
8:00 AM	0	4	4	0	67	11	3	0	0	5	4	3	0	1	6	2
8:15 AM	0	3	3	0	65	9	3	1	0	7	3	1	0	0	5	1
8:30 AM	1	2	2	1	60	8	2	3	0	4	5	2	0	1	7	2
8:45 AM	0	2	3	1	59	7	2	0	0	2	6	3	0	2	10	2

Start Time	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Fidelis Way Eastbound			
	U-Turn [C]	Left	Thru [C]	U-Turn	Thru	Thru [C]	Right	U-Turn [C]	U-Turn [C]	Thru	Thru [C]	Right	U-Turn	Left [C]	Right	Right [C]
4:00 PM	2	2	2	1	114	12	7	1	0	3	8	2	0	2	4	3
4:15 PM	0	3	2	1	117	11	6	1	0	2	10	1	0	1	5	2
4:30 PM	1	2	1	0	123	11	5	0	0	5	7	2	0	2	6	5
4:45 PM	1	1	2	1	129	10	7	2	0	9	3	3	0	3	5	8
5:00 PM	0	0	3	2	121	9	6	5	0	8	5	2	0	2	4	4
5:15 PM	0	2	1	1	117	12	7	3	0	7	6	1	0	2	6	1
5:30 PM	1	1	1	0	113	14	6	0	0	8	11	1	0	3	6	2
5:45 PM	0	1	2	0	111	15	5	1	0	9	14	1	0	2	5	1

AM PEAK HOUR 7:15 AM to 8:15 AM	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Fidelis Way Eastbound			
	U-Turn [C]	Left	Thru [C]	U-Turn	Thru	Thru [C]	Right	U-Turn [C]	U-Turn [C]	Thru	Thru [C]	Right	U-Turn	Left [C]	Right	Right [C]
	1	7	7	1	276	27	16	1	0	16	14	12	0	4	27	14
PHF	0.50				0.95				0.81				0.70			
HV %	0.0%	0.0%	14.3%	0.0%	1.8%	3.7%	0.0%	0.0%	0.0%	0.0%	7.1%	0.0%	0.0%	0.0%	0.0%	0.0%

PM PEAK HOUR 4:30 PM to 5:30 PM	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Fidelis Way Eastbound			
	U-Turn [C]	Left	Thru [C]	U-Turn	Thru	Thru [C]	Right	U-Turn [C]	U-Turn [C]	Thru	Thru [C]	Right	U-Turn	Left [C]	Right	Right [C]
	2	5	7	4	490	42	25	10	0	29	21	8	0	9	21	18
PHF	0.90				0.96				0.97				0.75			
HV %	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Note:

[C] denotes Carriage Road movement.

Client: Melissa Restrepo
 Project #: 316_C003_HSH
 BTD #: Location 2
 Location: Brighton, MA
 Street 1: Commonwealth Avenue
 Street 2: Fidelis Way
 Count Date: 1/23/2019
 Day of Week: Wednesday
 Weather: Cloudy, 40°F

BOSTON TRAFFIC DATA

PO BOX 1723, Framingham, MA 01701
 Office: 978-746-1259
 DataRequest@BostonTrafficData.com
 www.BostonTrafficData.com

HEAVY VEHICLES

Start Time	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound			Commonwealth Avenue [Carriage Road] Southbound				Fidelis Way Eastbound				
	U-Turn [C]	Left	Thru [C]	U-Turn	Thru	Thru [C]	Right	U-Turn [C]	U-Turn [C]	Thru	Thru [C]	Right	U-Turn	Left [C]	Right	Right [C]
7:00 AM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	2	1	0	0	0	0	1	0	0	0	0	0
8:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0

Start Time	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound			Commonwealth Avenue [Carriage Road] Southbound				Fidelis Way Eastbound				
	U-Turn [C]	Left	Thru [C]	U-Turn	Thru	Thru [C]	Right	U-Turn [C]	U-Turn [C]	Thru	Thru [C]	Right	U-Turn	Left [C]	Right	Right [C]
4:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR 7:15 AM to 8:15 AM PHF	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound			Commonwealth Avenue [Carriage Road] Southbound				Fidelis Way Eastbound				
	U-Turn [C]	Left	Thru [C]	U-Turn	Thru	Thru [C]	Right	U-Turn [C]	U-Turn [C]	Thru	Thru [C]	Right	U-Turn	Left [C]	Right	Right [C]
	0	0	1	0	5	1	0	0	0	0	1	0	0	0	0	0
	0.25				0.50			0.25				0.00				

PM PEAK HOUR 4:00 PM to 5:00 PM PHF	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound			Commonwealth Avenue [Carriage Road] Southbound				Fidelis Way Eastbound				
	U-Turn [C]	Left	Thru [C]	U-Turn	Thru	Thru [C]	Right	U-Turn [C]	U-Turn [C]	Thru	Thru [C]	Right	U-Turn	Left [C]	Right	Right [C]
	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0
	0.00				0.50			0.00				0.00				

Client: Melissa Restrepo
 Project #: 316_C003_HSH
 BTD #: Location 2
 Location: Brighton, MA
 Street 1: Commonwealth Avenue
 Street 2: Fidelis Way
 Count Date: 1/23/2019
 Day of Week: Wednesday
 Weather: Cloudy, 40°F



PEDESTRIANS & BICYCLES

Start Time	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Fidelis Way Eastbound				
	Left	Thru [C]	U-Turn	PED	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Left [C]	Right	Right [C]	PED	
7:00 AM	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	4
7:15 AM	0	0	0	2	0	0	0	1	0	0	0	1	0	0	0	0	9
7:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	7
7:45 AM	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	10
8:00 AM	0	0	0	1	0	0	0	2	0	0	0	2	0	0	0	0	8
8:15 AM	0	1	0	2	0	0	0	0	0	1	0	0	0	0	0	0	7
8:30 AM	0	0	0	3	0	0	0	1	0	0	0	1	0	0	0	0	6
8:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	9

Start Time	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Fidelis Way Eastbound				
	Left	Thru [C]	U-Turn	PED	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Left [C]	Right	Right [C]	PED	
4:00 PM	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	8
4:15 PM	0	0	0	2	0	0	0	1	0	0	0	1	0	0	0	0	7
4:30 PM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	7
4:45 PM	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	9
5:00 PM	0	0	0	3	0	0	0	1	0	0	0	1	0	0	0	0	10
5:15 PM	0	0	0	2	0	0	0	1	0	0	0	1	0	0	0	0	12
5:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	11
5:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	10

AM PEAK HOUR ¹ 7:15 AM to 8:15 AM	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Fidelis Way Eastbound			
	Left	Thru [C]	U-Turn	PED	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Left [C]	Right	Right [C]	PED
	0	0	0	7	1	0	0	3	0	0	0	3	0	0	0	34

PM PEAK HOUR ¹ 4:30 PM to 5:30 PM	Commonwealth Avenue [Carriage Road] Northbound				Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Fidelis Way Eastbound			
	Left	Thru [C]	U-Turn	PED	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Left [C]	Right	Right [C]	PED
	0	0	0	10	0	0	0	2	0	1	0	2	0	0	0	38

¹ Peak hours corresponds to vehicular peak hours.

Client: Melissa Restrepo
 Project #: 316_C003_HSH
 BTD #: Location 3A
 Location: Brighton, MA
 Street 1: Commonwealth Avenue
 Street 2: Washington Street
 Count Date: 1/23/2019
 Day of Week: Wednesday
 Weather: Cloudy, 40°F

BOSTON TRAFFIC DATA

PO BOX 1723, Framingham, MA 01701
 Office: 978-746-1259
 DataRequest@BostonTrafficData.com
 www.BostonTrafficData.com

PASSENGER CARS & HEAVY VEHICLES COMBINED

Start Time	Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Washington Street Eastbound				Washington Street Westbound			
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	Left [C]	Thru	Right	Right [C]	Left	Left [C]	Thru	Right [C]
7:00 AM	31	43	0	0	0	0	3	4	0	73	2	1	4	1	53	0
7:15 AM	33	49	0	0	0	0	3	5	0	79	3	2	5	1	55	0
7:30 AM	34	46	0	0	1	0	4	6	0	82	2	0	6	2	54	1
7:45 AM	32	48	0	0	0	0	5	7	1	80	4	1	8	3	56	3
8:00 AM	31	47	0	0	1	0	3	7	0	79	8	3	9	1	63	2
8:15 AM	28	48	1	0	0	0	4	6	0	76	3	4	11	0	64	1
8:30 AM	26	46	0	0	0	0	5	5	1	75	1	3	10	2	59	2
8:45 AM	25	47	0	0	0	0	3	4	0	74	2	2	9	1	60	1

Start Time	Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Washington Street Eastbound				Washington Street Westbound			
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	Left [C]	Thru	Right	Right [C]	Left	Left [C]	Thru	Right [C]
4:00 PM	24	98	0	0	0	0	6	15	2	73	6	0	8	3	50	3
4:15 PM	27	97	1	0	0	0	5	11	1	75	4	2	10	5	52	5
4:30 PM	34	99	0	1	0	0	4	8	0	76	2	4	9	4	58	4
4:45 PM	37	106	1	0	0	0	7	7	1	79	3	1	8	2	62	2
5:00 PM	39	96	0	0	0	0	10	5	1	83	4	0	9	3	61	3
5:15 PM	40	89	2	0	0	0	8	6	1	87	5	2	11	2	63	3
5:30 PM	37	90	0	0	0	0	6	4	0	84	3	1	10	2	59	2
5:45 PM	32	93	0	0	0	0	6	5	1	81	3	1	9	3	54	2

AM PEAK HOUR 7:30 AM to 8:30 AM	Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Washington Street Eastbound				Washington Street Westbound			
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	Left [C]	Thru	Right	Right [C]	Left	Left [C]	Thru	Right [C]
	125	189	1	0	2	0	16	26	1	317	17	8	34	6	237	7
PHF	0.98				0.92				0.95				0.93			
HV %	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%	6.3%	3.8%	0.0%	4.7%	5.9%	0.0%	2.9%	0.0%	3.8%	0.0%

PM PEAK HOUR 4:30 PM to 5:30 PM	Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Washington Street Eastbound				Washington Street Westbound			
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	Left [C]	Thru	Right	Right [C]	Left	Left [C]	Thru	Right [C]
	150	390	3	1	0	0	29	26	3	325	14	7	37	11	244	12
PHF	0.94				0.92				0.92				0.96			
HV %	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.1%	7.1%	0.0%	0.0%	0.0%	3.3%	0.0%

Note:

[C] denotes Carriage Road movement.

Client: Melissa Restrepo
 Project #: 316_C003_HSH
 BTD #: Location 3A
 Location: Brighton, MA
 Street 1: Commonwealth Avenue
 Street 2: Washington Street
 Count Date: 1/23/2019
 Day of Week: Wednesday
 Weather: Cloudy, 40°F

BOSTON TRAFFIC DATA

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HEAVY VEHICLES

Start Time	Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Washington Street Eastbound			Washington Street Westbound				
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	Left [C]	Thru	Right	Right [C]	Left	Left [C]	Thru	Right [C]
7:00 AM	0	3	0	0	0	0	0	0	0	4	0	0	0	0	2	0
7:15 AM	0	2	0	0	0	0	0	0	0	4	0	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	5	0	0	0	0	2	0
7:45 AM	0	1	0	0	0	0	0	0	0	3	1	0	0	0	2	0
8:00 AM	0	2	0	0	0	0	0	0	0	4	0	0	0	0	3	0
8:15 AM	0	1	0	0	0	0	1	1	0	3	0	0	1	0	2	0
8:30 AM	0	1	0	0	0	0	0	0	0	4	0	0	0	1	3	0
8:45 AM	0	1	0	0	0	0	0	0	0	3	0	0	0	0	2	0

Start Time	Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Washington Street Eastbound			Washington Street Westbound				
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	Left [C]	Thru	Right	Right [C]	Left	Left [C]	Thru	Right [C]
4:00 PM	0	1	0	0	0	0	0	0	0	2	0	0	0	0	2	0
4:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	1	0	2	0
4:30 PM	0	2	0	0	0	0	0	0	0	2	0	0	0	0	3	0
4:45 PM	0	1	0	0	0	0	0	0	0	3	0	0	0	0	2	0
5:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0
5:15 PM	0	1	0	0	0	0	0	0	0	3	1	0	0	0	1	0
5:30 PM	0	1	0	0	0	0	0	0	0	2	0	0	0	0	2	0
5:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0

AM PEAK HOUR 7:45 AM to 8:45 AM PHF	Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Washington Street Eastbound			Washington Street Westbound				
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	Left [C]	Thru	Right	Right [C]	Left	Left [C]	Thru	Right [C]
	0	5	0	0	0	0	1	1	0	14	1	0	1	1	10	0
	0.63				0.25				0.94			0.75				

PM PEAK HOUR 4:00 PM to 5:00 PM PHF	Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Washington Street Eastbound			Washington Street Westbound				
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	Left [C]	Thru	Right	Right [C]	Left	Left [C]	Thru	Right [C]
	0	4	0	0	0	0	0	0	0	9	0	0	1	0	9	0
	0.50				0.00				0.75			0.83				

Client: Melissa Restrepo
 Project #: 316_C003_HSH
 BTM #: Location 3A
 Location: Brighton, MA
 Street 1: Commonwealth Avenue
 Street 2: Washington Street
 Count Date: 1/23/2019
 Day of Week: Wednesday
 Weather: Cloudy, 40°F



PEDESTRIANS & BICYCLES

Start Time	Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Washington Street Eastbound				Washington Street Westbound			
	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Thru	Right	Right [C]	PED	Left [C]	Thru	Right [C]	PED
7:00 AM	0	0	0	33	0	0	0	33	0	0	0	20	0	0	0	0
7:15 AM	1	0	0	38	0	0	0	38	0	0	0	25	0	1	0	0
7:30 AM	0	0	0	42	0	0	0	42	1	0	0	24	0	1	0	4
7:45 AM	0	1	0	45	0	0	0	45	1	0	0	26	0	0	0	1
8:00 AM	0	0	0	40	0	0	0	40	0	0	0	28	0	1	0	0
8:15 AM	0	0	0	48	0	1	0	48	2	0	0	26	0	1	0	2
8:30 AM	0	0	0	46	0	0	0	46	1	0	0	29	0	0	0	1
8:45 AM	0	0	0	43	0	0	0	43	0	0	0	25	0	0	0	0

Start Time	Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Washington Street Eastbound				Washington Street Westbound			
	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Thru	Right	Right [C]	PED	Left [C]	Thru	Right [C]	PED
4:00 PM	0	0	0	24	0	0	0	24	1	0	0	10	0	0	0	0
4:15 PM	0	0	0	25	0	0	0	25	1	0	0	12	0	0	0	0
4:30 PM	0	0	0	27	0	0	0	27	0	0	0	9	0	1	0	1
4:45 PM	0	0	0	30	0	0	0	30	0	0	0	10	0	0	0	0
5:00 PM	0	0	0	33	0	0	0	33	1	0	0	14	0	0	0	0
5:15 PM	0	0	0	36	0	0	0	36	0	0	0	17	0	1	0	0
5:30 PM	0	0	0	39	0	0	0	39	0	0	0	22	0	0	0	0
5:45 PM	0	0	0	34	0	0	0	34	0	0	0	19	0	0	0	0

AM PEAK HOUR ¹ 7:30 AM to 8:30 AM	Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Washington Street Eastbound				Washington Street Westbound			
	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Thru	Right	Right [C]	PED	Left [C]	Thru	Right [C]	PED
	0	1	0	175	0	1	0	175	4	0	0	104	0	3	0	7

PM PEAK HOUR ¹ 4:30 PM to 5:30 PM	Commonwealth Avenue Southbound				Commonwealth Avenue [Carriage Road] Southbound				Washington Street Eastbound				Washington Street Westbound			
	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Thru	Right	Right [C]	PED	Left [C]	Thru	Right [C]	PED
	0	0	0	126	0	0	0	126	1	0	0	50	0	2	0	1

¹ Peak hours corresponds to vehicular peak hours.

Client: Melissa Restrepo
 Project #: 316_C003_HSH
 BTD #: Location 3B
 Location: Brighton, MA
 Street 1: Commonwealth Avenue
 Street 2: Washington Street
 Count Date: 1/23/2019
 Day of Week: Wednesday
 Weather: Cloudy, 40°F

BOSTON TRAFFIC DATA

PO BOX 1723, Framingham, MA 01701
 Office: 978-746-1259
 DataRequest@BostonTrafficData.com
 www.BostonTrafficData.com

PASSENGER CARS & HEAVY VEHICLES COMBINED

Commonwealth Avenue Northbound					Commonwealth Avenue [Carriage Road] Northbound					Washington Street Eastbound				Washington Street Westbound		
Start Time	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	U-Turn	Left	Left [C]	Thru	U-Turn	Thru	Right	Right [C]
7:00 AM	0	119	0	9	0	1	5	10	0	6	1	97	0	58	21	2
7:15 AM	1	124	1	10	0	0	6	11	0	8	2	102	0	60	22	1
7:30 AM	0	146	2	16	0	1	7	10	0	13	3	101	0	63	24	2
7:45 AM	0	160	4	21	0	0	9	12	0	15	1	96	0	70	19	2
8:00 AM	1	167	3	23	0	1	8	13	0	17	3	91	0	74	13	1
8:15 AM	0	176	1	27	0	1	7	16	0	15	5	84	0	76	14	2
8:30 AM	0	172	2	29	0	0	7	20	0	14	4	83	0	73	12	1
8:45 AM	0	168	1	33	0	1	6	17	0	15	4	80	0	71	11	1

Commonwealth Avenue Northbound					Commonwealth Avenue [Carriage Road] Northbound					Washington Street Eastbound				Washington Street Westbound		
Start Time	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	U-Turn	Left	Left [C]	Thru	U-Turn	Thru	Right	Right [C]
4:00 PM	0	81	1	15	0	1	2	11	0	9	3	85	0	64	8	0
4:15 PM	0	84	0	18	0	0	3	8	0	10	2	90	0	72	9	1
4:30 PM	0	82	2	16	0	0	5	5	0	11	4	95	0	75	11	2
4:45 PM	1	85	0	13	0	1	6	7	0	12	3	101	0	73	8	2
5:00 PM	0	83	1	18	0	0	5	6	0	11	4	107	0	76	7	3
5:15 PM	0	79	1	23	0	1	6	10	0	14	3	110	0	79	8	3
5:30 PM	0	76	2	21	0	1	5	17	0	13	3	105	0	73	6	4
5:45 PM	0	73	1	20	0	0	4	15	0	12	2	99	0	68	7	2

AM PEAK HOUR 7:45 AM to 8:45 AM	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				Washington Street Eastbound				Washington Street Westbound			
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	U-Turn	Left	Left [C]	Thru	U-Turn	Thru	Right	Right [C]
	1	675	10	100	0	2	31	61	0	61	13	354	0	293	58	6
PHF	0.96				0.87				0.96				0.97			
HV %	0.0%	1.2%	0.0%	1.0%	0.0%	0.0%	3.2%	1.6%	0.0%	0.0%	0.0%	4.0%	0.0%	4.1%	0.0%	0.0%

PM PEAK HOUR 4:45 PM to 5:45 PM	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				Washington Street Eastbound				Washington Street Westbound			
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right	U-Turn	Left	Left [C]	Thru	U-Turn	Thru	Right	Right [C]
	1	323	4	75	0	3	22	40	0	50	13	423	0	301	29	12
PHF	0.98				0.71				0.96				0.95			
HV %	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%	2.3%	0.0%	0.0%

Note:

[C] denotes Carriage Road movement.

Client: Melissa Restrepo
 Project #: 316_C003_HSH
 BTD #: Location 3B
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 Street 1: Commonwealth Avenue
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BOSTON TRAFFIC DATA

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HEAVY VEHICLES

Start Time	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				U-Turn	Washington Street Eastbound			Washington Street Westbound			
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right		Left	Left [C]	Thru	U-Turn	Thru	Right	Right [C]
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	4	0	2	0	0
7:15 AM	0	2	0	0	0	0	0	0	0	1	0	3	0	1	0	0
7:30 AM	0	1	0	1	0	0	0	0	0	0	0	5	0	2	0	0
7:45 AM	0	3	0	0	0	0	1	0	0	0	0	3	0	2	0	0
8:00 AM	0	2	0	0	0	0	0	0	0	0	0	4	0	3	0	0
8:15 AM	0	2	0	0	0	0	0	1	0	0	0	3	0	3	0	0
8:30 AM	0	1	0	1	0	0	0	0	0	0	0	4	0	4	0	0
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	3	0	2	0	0

Start Time	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				U-Turn	Washington Street Eastbound			Washington Street Westbound			
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right		Left	Left [C]	Thru	U-Turn	Thru	Right	Right [C]
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0
4:15 PM	0	1	0	0	0	0	0	0	0	0	1	1	0	3	0	0
4:30 PM	0	1	0	1	0	0	0	0	0	0	0	2	0	3	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	2	0	0
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	2	0	2	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	2	0	2	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0

AM PEAK HOUR 7:45 AM to 8:45 AM PHF	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				U-Turn	Washington Street Eastbound			Washington Street Westbound			
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right		Left	Left [C]	Thru	U-Turn	Thru	Right	Right [C]
	0	8	0	1	0	0	1	1	0	0	0	14	0	12	0	0
	0.75				0.50					0.88			0.75			

PM PEAK HOUR 4:15 PM to 5:15 PM PHF	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				U-Turn	Washington Street Eastbound			Washington Street Westbound			
	Left	Thru	Thru [C]	Right	Left	Thru	Thru [C]	Right		Left	Left [C]	Thru	U-Turn	Thru	Right	Right [C]
	0	3	0	1	0	0	0	0	0	0	1	8	0	10	0	0
	0.50				0.00					0.75			0.83			

Client: Melissa Restrepo
 Project #: 316_C003_HSH
 BTM #: Location 3B
 Location: Brighton, MA
 Street 1: Commonwealth Avenue
 Street 2: Washington Street
 Count Date: 1/23/2019
 Day of Week: Wednesday
 Weather: Cloudy, 40°F



PEDESTRIANS & BICYCLES

Start Time	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				Washington Street Eastbound				Washington Street Westbound			
	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Left	Left [C]	Thru	PED	Thru	Right	Right [C]	PED
7:00 AM	0	0	0	8	0	0	0	8	0	0	0	0	0	0	0	5
7:15 AM	0	0	0	10	0	0	0	10	0	0	0	0	1	0	0	8
7:30 AM	0	0	0	9	0	1	0	9	0	0	1	4	1	0	0	7
7:45 AM	0	0	0	13	0	0	0	13	0	0	1	1	0	0	0	9
8:00 AM	0	0	0	11	0	0	0	11	0	0	0	0	1	0	0	10
8:15 AM	0	0	0	14	0	1	0	14	0	0	2	2	1	0	0	8
8:30 AM	0	0	0	12	0	0	1	12	0	0	1	1	0	0	0	9
8:45 AM	0	0	0	11	0	0	0	11	0	0	0	0	0	0	0	7

Start Time	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				Washington Street Eastbound				Washington Street Westbound			
	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Left	Left [C]	Thru	PED	Thru	Right	Right [C]	PED
4:00 PM	0	0	0	11	0	0	0	11	0	0	1	0	0	0	0	10
4:15 PM	0	0	0	14	0	1	0	14	0	0	1	0	0	0	0	11
4:30 PM	0	0	0	13	0	0	0	13	0	0	0	1	1	0	0	12
4:45 PM	0	0	0	15	0	0	0	15	0	0	0	0	0	0	0	10
5:00 PM	0	0	0	17	0	0	1	17	0	0	1	0	0	0	0	9
5:15 PM	0	0	0	16	0	0	0	16	0	0	0	0	1	0	0	12
5:30 PM	0	0	0	19	0	0	0	19	0	0	0	0	0	0	0	8
5:45 PM	0	0	0	18	0	0	0	18	0	0	0	0	0	0	0	9

AM PEAK HOUR ¹ 7:45 AM to 8:45 AM	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				Washington Street Eastbound				Washington Street Westbound			
	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Left	Left [C]	Thru	PED	Thru	Right	Right [C]	PED
	0	0	0	50	0	1	1	50	0	0	4	4	2	0	0	36

PM PEAK HOUR ¹ 4:45 PM to 5:45 PM	Commonwealth Avenue Northbound				Commonwealth Avenue [Carriage Road] Northbound				Washington Street Eastbound				Washington Street Westbound			
	Thru	Thru [C]	Right	PED	Thru	Thru [C]	Right	PED	Left	Left [C]	Thru	PED	Thru	Right	Right [C]	PED
	0	0	0	67	0	0	1	67	0	0	1	0	1	0	0	39

¹ Peak hours corresponds to vehicular peak hours.

Seasonal Adjustment Factors

Massachusetts Highway Department
Statewide Traffic Data Collection
2016 Weekday Seasonal Factors

Factor Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Axle Factor
R1	1.21	1.17	1.10	1.04	0.97	0.92	0.90	0.88	0.97	0.93	0.97	1.05	0.88
R2	0.95	0.96	0.98	0.97	0.97	0.93	0.97	0.94	0.96	0.90	0.92	0.93	0.96
R3	1.15	1.03	1.02	0.99	0.92	0.91	0.91	0.90	0.94	0.93	0.99	1.02	0.97
R4-R7	1.09	1.13	1.06	1.05	0.95	0.90	0.88	0.91	0.95	0.95	1.04	1.07	0.95
U1-Boston	1.03	1.04	0.99	0.96	0.94	0.91	0.93	0.91	0.95	0.93	0.98	0.98	0.93
U1-Essex	1.06	1.08	1.04	1.01	0.95	0.89	0.88	0.86	0.94	0.94	1.01	1.05	0.91
U1-Southeast	1.07	1.12	1.05	1.01	0.95	0.89	0.87	0.86	0.94	0.95	0.99	1.01	0.94
U1-West	0.97	0.97	0.91	0.95	0.92	0.90	0.94	0.92	0.92	0.90	0.93	0.94	0.94
U1-Worcester	1.10	1.14	1.03	1.00	0.94	0.91	0.92	0.90	0.94	0.93	0.97	1.04	0.92
U2	1.02	1.00	0.97	0.96	0.93	0.90	0.93	0.91	0.94	0.93	0.96	0.99	0.95
U3	1.00	1.00	0.96	0.95	0.92	0.89	0.94	0.92	0.94	0.93	0.96	0.97	0.96
U4-U7	1.02	1.03	0.97	0.96	0.92	0.89	0.93	0.92	0.94	0.95	0.98	0.96	0.93
Rec - East	1.18	1.17	1.13	1.05	0.93	0.84	0.79	0.80	0.93	1.00	1.09	1.13	0.99
Rec - West	1.20	1.24	1.29	1.18	1.03	0.85	0.70	0.81	0.92	0.95	1.11	1.15	0.98

Round off:

0-999 = 10

>1000 = 100

U = Urban

R = Rural

1 - Interstate

2 - Freeway and Expressway

3 - Other Principal Arterial

4 - Minor Arterial

5 - Major Collector

6 - Minor Collector

7 - Local Road and Street

<p>Recreational - East Group - Cape Cod (all towns) including the town of Plymouth south of Route 3A (stations 7014,7079,7080,7090,7091,7092,7093,7094,7095,7096,7097,7108 and 7178), Martha's Vineyard and Nantucket.</p>
<p>Recreational - West Group - Continuous Stations 2 and 189 including stations 1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1113,1114,1116,2196,2197 and 2198.</p>

Trip Generation - Proposed Program

1515 Commonwealth Avenue

Proposed Trip Generation Assessment

HOWARD STEIN HUDSON
4-Jan-2019

xx HARD CODED TO BALANCE (Manually change formatting)

Land Use	Size	Category	Directional Split	Average Trip Rate	Unadjusted Vehicle Trips	Assumed National Vehicle Occupancy Rate ¹	Unadjusted Person-Trips	Primary Person Trips	Transit Share ³	Transit Person-Trips	Walk/Bike/Other Share ³	Walk/ Bike/ Other Trips	Auto Share ³	Auto Person-Trips	% Taxi	Private Auto Person-Trips	Taxi Person-Trips	Assumed Local	Assumed Local	Total	Total	Total
																		Auto Occupancy Rate ²	Auto Occupancy Rate for Taxis ⁴	Adjusted Private Auto Trips	Adjusted Total Trips	Adjusted (Private + Taxi) Trips
Daily Peak Hour																						
Multifamily Housing (High Rise) ⁵	330	Total		4.450	1,468	1.18	1,732	1,732	19%	330	22%	382	59%	1,020	5%	970	52	1.18	1.18	822	88	910
	units	In	50%	2.225	734	1.18	866	866	19%	165	22%	191	59%	510	5%	485	26	1.18	1.18	411	44	455
		Out	50%	2.225	734	1.18	866	866	19%	165	22%	191	59%	510	5%	485	26	1.18	1.18	411	44	455
Total		Total			1,468		1,732	1,732		330		382		1,020		970	52			822	88	910
		In			734		866	866		165		191		510		485	26			411	44	455
		Out			734		866	866		165		191		510		485	26			411	44	455
AM Peak Hour																						
Multifamily Housing (High Rise) ⁵	330	Total		0.310	103	1.18	122	122	18%	33	30%	26	52%	63	5%	60	3	1.18	1.18	51	8	59
	units	In	24%	0.074	25	1.18	30	30	18%	5	30%	9	52%	16	5%	15	1	1.18	1.18	13	4	17
		Out	76%	0.236	78	1.18	92	92	30%	28	19%	17	51%	47	5%	45	2	1.18	1.18	38	4	42
Total		Total			103		122	122		33		26		63		60	3			51	8	59
		In			25		30	30		5		9		16		15	1			13	4	17
		Out			78		92	92		28		17		47		45	2			38	4	42
PM Peak Hour																						
Multifamily Housing (High Rise) ⁵	330	Total		0.360	118	1.18	139	139	18%	36	30%	32	52%	71	5%	68	3	1.18	1.18	58	8	66
	units	In	61%	0.220	72	1.18	85	85	30%	26	19%	16	51%	43	5%	41	2	1.18	1.18	35	4	39
		Out	39%	0.140	46	1.18	54	54	18%	10	30%	16	52%	28	5%	27	1	1.18	1.18	23	4	27
Total		Total			118		139	139		36		32		71		68	3			58	8	66
		In			72		85	85		26		16		43		41	2			35	4	39
		Out			46		54	54		10		16		28		27	1			23	4	27

1. 2017 National vehicle occupancy rates - 1.18:home to work; 1.82: family/personal business; 1.82: shopping; 2.1 social/recreational
2. Based on ITE Trip Generation Handbook, 3rd Edition method
3. Mode shares based on peak-hour BTD Data for Area 10
4. Local vehicle occupancy rates based on 2009 National vehicle occupancy rates
5. ITE Trip Generation Manual, 10th Edition, LUC 222 (Multifamily Housing High-Rise (11+ Floors)), average rate

Synchro Intersection Level of Service Reports

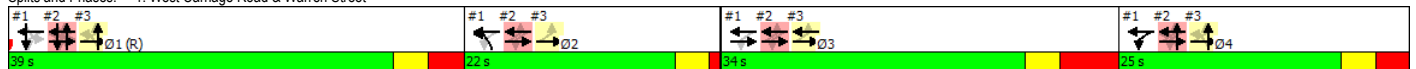
- Existing (2019) Condition

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕				↕	↕
Traffic Volume (vph)	0	216	13	12	592	0	27	0	0	109	14	67
Future Volume (vph)	0	216	13	12	592	0	27	0	0	109	14	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.992									0.952	
Fit Protected				0.950			0.950				0.972	
Satd. Flow (prot)	0	1459	0	1425	1710	0	1562	0	0	0	1407	0
Fit Permitted				0.097			0.950				0.972	
Satd. Flow (perm)	0	1459	0	146	1710	0	1562	0	0	0	1407	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		2										
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		329			104			401			442	
Travel Time (s)		7.5			2.4			9.1			10.0	
Confl. Peds. (#/hr)			96	96								
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.81	0.81	0.81	0.92	0.92	0.92
Heavy Vehicles (%)	0%	3%	3%	14%	0%	0%	4%	0%	0%	0%	7%	2%
Parking (#/hr)		0	0							0	0	0
Adj. Flow (vph)	0	230	14	13	637	0	33	0	0	118	15	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	244	0	13	637	0	33	0	0	0	206	0
Turn Type		NA		custom	NA		Prot			Perm	NA	
Protected Phases		3		4	1 2 3 4!		2!				1!	
Permitted Phases				1 2 3!	1 2!					1!		
Detector Phase		3		4	1 2 3 4		2			1	1	
Switch Phase												
Minimum Initial (s)		8.0		8.0			8.0			8.0	8.0	
Minimum Split (s)		30.0		14.0			12.0			14.0	14.0	
Total Split (s)		34.0		25.0			22.0			39.0	39.0	
Total Split (%)		28.3%		20.8%			18.3%			32.5%	32.5%	
Maximum Green (s)		26.0		19.0			18.0			33.0	33.0	
Yellow Time (s)		3.0		3.0			3.0			3.0	3.0	
All-Red Time (s)		5.0		3.0			1.0			3.0	3.0	
Lost Time Adjust (s)		0.0		0.0			0.0			0.0	0.0	
Total Lost Time (s)		8.0		6.0			4.0			6.0	6.0	
Lead/Lag		Lead		Lag			Lag			Lead	Lead	
Lead-Lag Optimize?				Yes			Yes					
Vehicle Extension (s)		1.0		1.0			1.0			1.0	1.0	
Recall Mode		None		None			Min			C-Max	C-Max	
Walk Time (s)		8.0										
Flash Dont Walk (s)		14.0										
Pedestrian Calls (#/hr)		162										
Act Effct Green (s)		24.3		108.0	120.0		8.7				43.9	
Actuated g/C Ratio		0.20		0.90	1.00		0.07				0.37	
v/c Ratio		0.82		0.04	0.37		0.29				0.40	
Control Delay		67.6		0.7	0.6		59.1				32.0	
Queue Delay		0.0		0.0	0.0		0.0				0.0	
Total Delay		67.6		0.7	0.6		59.1				32.0	
LOS		E		A	A		E				C	
Approach Delay		67.6			0.6			59.1			32.0	
Approach LOS		E			A			E			C	
Queue Length 50th (ft)		178		0	0		25				119	
Queue Length 95th (ft)		#303		m0	0		52				198	
Internal Link Dist (ft)		249			24			321			362	
Turn Bay Length (ft)												
Base Capacity (vph)		317		333	1682		234				515	
Starvation Cap Reductn		0		0	0		0				0	
Spillback Cap Reductn		0		0	0		0				0	
Storage Cap Reductn		0		0	0		0				0	
Reduced v/c Ratio		0.77		0.04	0.38		0.14				0.40	

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 46 (38%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 22.4
 Intersection LOS: C
 Intersection Capacity Utilization 55.4%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 1: West Carriage Road & Warren Street

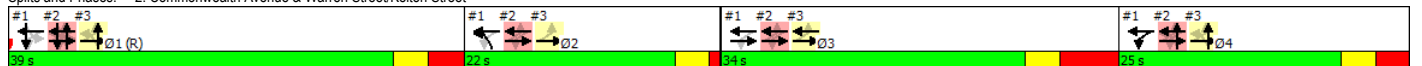


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2	Ø3	Ø4
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔			
Traffic Volume (vph)	47	140	138	19	171	10	367	592	15	3	169	66			
Future Volume (vph)	47	140	138	19	171	10	367	592	15	3	169	66			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width (ft)	12	11	12	12	11	12	12	12	12	12	12	12			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95			
Ped Bike Factor	0.99	0.98		0.99	1.00										
Frt		0.926			0.992			0.998			0.958				
Fit Protected	0.950			0.950				0.981			0.999				
Satd. Flow (prot)	1593	1484	0	1533	1637	0	0	3146	0	0	3028	0			
Fit Permitted	0.635			0.579				0.732			0.815				
Satd. Flow (perm)	1053	1484	0	921	1637	0	0	2347	0	0	2470	0			
Right Turn on Red			No			No			Yes			No			
Satd. Flow (RTOR)								2							
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		104			131			1035			514				
Travel Time (s)		2.4			3.0			23.5			11.7				
Confl. Peds. (#/hr)	46		66	66		46									
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.99	0.99	0.99	0.96	0.96	0.96			
Heavy Vehicles (%)	2%	3%	0%	6%	0%	0%	1%	1%	9%	0%	3%	2%			
Adj. Flow (vph)	50	149	147	20	184	11	371	598	15	3	176	69			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	50	296	0	20	195	0	0	984	0	0	248	0			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA				
Protected Phases		1 2 3 4!			1 2 3 4!			1 4!			1!		2	3	4
Permitted Phases	1 2 3 4!			1 2 3 4!			1 4!			1!					
Detector Phase	1 2 3 4	1 2 3 4		1 2 3 4	1 2 3 4		1 4	1 4		1	1				
Switch Phase															
Minimum Initial (s)									8.0	8.0			8.0	8.0	8.0
Minimum Split (s)									14.0	14.0			12.0	30.0	14.0
Total Split (s)									39.0	39.0			22.0	34.0	25.0
Total Split (%)									32.5%	32.5%			18%	28%	21%
Maximum Green (s)									33.0	33.0			18.0	26.0	19.0
Yellow Time (s)									3.0	3.0			3.0	3.0	3.0
All-Red Time (s)									3.0	3.0			1.0	5.0	3.0
Lost Time Adjust (s)															-2.0
Total Lost Time (s)															4.0
Lead/Lag									Lead	Lead			Lag	Lead	Lag
Lead-Lag Optimize?													Yes		Yes
Vehicle Extension (s)									1.0	1.0			1.0	1.0	1.0
Recall Mode									C-Max	C-Max			Min	None	None
Walk Time (s)															8.0
Flash Dont Walk (s)															14.0
Pedestrian Calls (#/hr)															162
Act Effct Green (s)	120.0	120.0		120.0	120.0			70.9			45.9				
Actuated g/C Ratio	1.00	1.00		1.00	1.00			0.59			0.38				
v/c Ratio	0.05	0.20		0.02	0.12			0.71			0.26				
Control Delay	0.1	0.2		0.1	0.1			21.4			27.0				
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0				
Total Delay	0.1	0.2		0.1	0.1			21.4			27.0				
LOS	A	A		A	A			C			C				
Approach Delay		0.2			0.1			21.4			27.0				
Approach LOS		A			A			C			C				
Queue Length 50th (ft)	0	0		0	0			270			69				
Queue Length 95th (ft)	m0	m0		m0	0			379			107				
Internal Link Dist (ft)		24			51			955			434				
Turn Bay Length (ft)															
Base Capacity (vph)	1048	1477		917	1630			1388			945				
Starvation Cap Reductn	0	0		0	0			0			0				
Spillback Cap Reductn	0	0		0	0			0			0				
Storage Cap Reductn	0	0		0	0			0			0				
Reduced v/c Ratio	0.05	0.20		0.02	0.12			0.71			0.26				

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 46 (38%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 15.5
 Intersection LOS: B
 Intersection Capacity Utilization 78.1%
 ICU Level of Service D
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 2: Commonwealth Avenue & Warren Street/Kelton Street

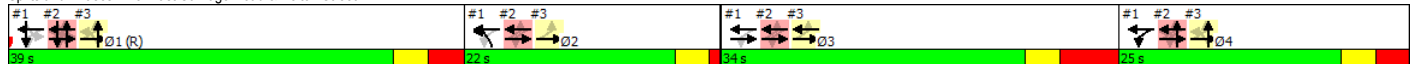


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø4
Lane Configurations	↖	↗			↖			↗							
Traffic Volume (vph)	12	146	0	0	198	10	2	14	7	0	0	0			
Future Volume (vph)	12	146	0	0	198	10	2	14	7	0	0	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane 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	0.92				0.99				0.958						
Fit Protected	0.950				0.993				0.958						
Satd. Flow (prot)	1624	1676	0	0	1517	0	0	1468	0	0	0	0			
Fit Permitted	0.591				0.996				0.996						
Satd. Flow (perm)	928	1676	0	0	1517	0	0	1468	0	0	0	0			
Right Turn on Red			Yes				Yes		Yes				Yes		
Satd. Flow (RTOR)					2				8						
Link Speed (mph)	30				30				30				30		
Link Distance (ft)	131				358				349				367		
Travel Time (s)	3.0				8.1				7.9				8.3		
Confl. Peds. (#/hr)	46				46				46				46		
Peak Hour Factor	0.97	0.97	0.97	0.95	0.95	0.95	0.86	0.86	0.86	0.92	0.92	0.92			
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%			
Parking (#/hr)					0				0						
Adj. Flow (vph)	12	151	0	0	208	11	2	16	8	0	0	0			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	12	151	0	0	219	0	0	26	0	0	0	0			
Turn Type	Perm	NA			NA			Perm	NA						
Protected Phases	1 2 3 4!				3				1 4!				1	2	4
Permitted Phases	1 2 3 4!								1 4!						
Detector Phase	1 2 3 4		1 2 3 4		3		1 4		1 4						
Switch Phase															
Minimum Initial (s)					8.0								8.0	8.0	8.0
Minimum Split (s)					30.0								14.0	12.0	14.0
Total Split (s)					34.0								39.0	22.0	25.0
Total Split (%)					28.3%								33%	18%	21%
Maximum Green (s)					26.0								33.0	18.0	19.0
Yellow Time (s)					3.0								3.0	3.0	3.0
All-Red Time (s)					5.0								3.0	1.0	3.0
Lost Time Adjust (s)					0.0										
Total Lost Time (s)					8.0										
Lead/Lag					Lead								Lead	Lag	Lag
Lead-Lag Optimize?														Yes	Yes
Vehicle Extension (s)					1.0								1.0	1.0	1.0
Recall Mode					None								C-Max	Min	None
Walk Time (s)					8.0										
Flash Dont Walk (s)					14.0										
Pedestrian Calls (#/hr)					162										
Act Effct Green (s)	120.0	120.0			24.3			68.9							
Actuated g/C Ratio	1.00	1.00			0.20			0.57							
v/c Ratio	0.01	0.09			0.71			0.03							
Control Delay	0.0	0.1			57.4			9.5							
Queue Delay	0.0	0.0			0.0			0.0							
Total Delay	0.0	0.1			57.4			9.5							
LOS	A	A			E			A							
Approach Delay	0.1				57.4				9.5						
Approach LOS	A				E				A						
Queue Length 50th (ft)	0	0			155			6							
Queue Length 95th (ft)	0	m0			243			19							
Internal Link Dist (ft)	51				278				269				287		
Turn Bay Length (ft)															
Base Capacity (vph)	913	1649			330			846							
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	0.01	0.09			0.66			0.03							

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 46 (38%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 31.4
 Intersection LOS: C
 Intersection Capacity Utilization 35.4%
 ICU Level of Service A
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 3: East Carriage Road & Kelton Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø6
Lane Configurations		↔			↔						↔				
Traffic Volume (vph)	1	345	8	6	253	8	0	0	0	0	16	27			
Future Volume (vph)	1	345	8	6	253	8	0	0	0	0	16	27			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
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			0.98						0.69				
Frt		0.997			0.996						0.915				
Fit Protected					0.999										
Satd. Flow (prot)	0	1457	0	0	1610	0	0	0	0	0	929	0			
Fit Permitted		0.996			0.994										
Satd. Flow (perm)	0	1451	0	0	1598	0	0	0	0	0	929	0			
Right Turn on Red			Yes			Yes			Yes			No			
Satd. Flow (RTOR)		1													
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		289			124			357			471				
Travel Time (s)		6.6			2.8			8.1			10.7				
Confl. Peds. (#/hr)	175		50	50		175						104			
Peak Hour Factor	0.95	0.95	0.95	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92			
Heavy Vehicles (%)	0%	5%	0%	0%	4%	0%	2%	2%	2%	0%	6%	4%			
Parking (#/hr)	0	0	0							0	0	0			
Adj. Flow (vph)	1	363	8	6	272	9	0	0	0	0	17	29			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	372	0	0	287	0	0	0	0	0	46	0			
Turn Type	Perm	NA		Perm	NA						NA				
Protected Phases		5			1 2 5 6!						16!		1	2	6
Permitted Phases	5			1 2 5 6!											
Detector Phase	5	5		1 2 5 6	1 2 5 6						16				
Switch Phase															
Minimum Initial (s)	10.0	10.0											8.0	5.0	6.0
Minimum Split (s)	25.0	25.0											23.0	20.0	21.0
Total Split (s)	56.0	56.0											23.0	20.0	21.0
Total Split (%)	46.7%	46.7%											19%	17%	18%
Maximum Green (s)	47.0	47.0											17.0	14.0	15.0
Yellow Time (s)	3.0	3.0											3.0	3.0	3.0
All-Red Time (s)	6.0	6.0											3.0	3.0	3.0
Lost Time Adjust (s)															
Total Lost Time (s)															
Lead/Lag	Lead	Lead											Lead	Lag	Lag
Lead-Lag Optimize?															Yes
Vehicle Extension (s)	2.0	2.0											2.0	4.0	2.0
Recall Mode	None	None											C-Max	None	None
Walk Time (s)	7.0	7.0											6.0	7.0	7.0
Flash Dont Walk (s)	9.0	9.0											7.0	7.0	7.0
Pedestrian Calls (#/hr)	0	0											0	0	0
Act Effct Green (s)		39.5			120.0						45.5				
Actuated g/C Ratio		0.33			1.00						0.38				
v/c Ratio		0.78			0.18						0.13				
Control Delay		47.3			0.2						29.4				
Queue Delay		0.0			0.0						0.0				
Total Delay		47.3			0.2						29.4				
LOS		D			A						C				
Approach Delay		47.3			0.2						29.4				
Approach LOS		D			A						C				
Queue Length 50th (ft)		251			0						24				
Queue Length 95th (ft)		345			0						57				
Internal Link Dist (ft)		209			44			277			391				
Turn Bay Length (ft)															
Base Capacity (vph)		568			1580						343				
Starvation Cap Reductn		0			0						0				
Spillback Cap Reductn		0			0						0				
Storage Cap Reductn		0			0						0				
Reduced v/c Ratio		0.65			0.18						0.13				

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 37 (31%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 27.0
 Intersection Capacity Utilization 44.7%
 Intersection LOS: C
 ICU Level of Service A
 Analysis Period (min) 15
 ! Phase conflict between lane groups.

Splits and Phases: 4: West Carriage Road & Washington Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø5
Lane Configurations	↖	↗		↖	↗			↕		↖	↗				
Traffic Volume (vph)	63	264	18	35	267	60	0	695	113	129	195	0			
Future Volume (vph)	63	264	18	35	267	60	0	695	113	129	195	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width (ft)	12	16	12	12	16	12	12	11	12	11	11	12			
Storage Length (ft)	0		0	0		0	0		0	180		0			
Storage Lanes	1		0	1		0	0		0	1		0			
Taper Length (ft)	25			25			25			50					
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00			
Ped Bike Factor	0.79	0.99		0.91	0.94			1.00		1.00					
Frt		0.990			0.972			0.979							
Flt Protected	0.950			0.950						0.950					
Satd. Flow (prot)	1624	1825	0	1577	1709	0	0	3034	0	1570	3079	0			
Flt Permitted	0.558			0.580						0.950					
Satd. Flow (perm)	753	1825	0	874	1709	0	0	3034	0	1565	3079	0			
Right Turn on Red			Yes			Yes			No			Yes			
Satd. Flow (RTOR)															
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		124			145			645			487				
Travel Time (s)		2.8			3.3			14.7			11.1				
Confl. Peds. (#/hr)	175		50	50		175			4	4					
Confl. Bikes (#/hr)									1						
Peak Hour Factor	0.96	0.96	0.96	0.97	0.97	0.97	0.96	0.96	0.96	0.98	0.98	0.98			
Heavy Vehicles (%)	0%	4%	6%	3%	4%	0%	0%	1%	1%	0%	2%	0%			
Adj. Flow (vph)	66	275	19	36	275	62	0	724	118	132	199	0			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	66	294	0	36	337	0	0	842	0	132	199	0			
Turn Type	Perm	NA		Perm	NA			NA		Prot	NA				
Protected Phases		1 2 5 6!			1 2 5 6!			1 2!		6!	1 6!		1	2	5
Permitted Phases	1 2 5 6!			1 2 5 6!											
Detector Phase	1 2 5 6	1 2 5 6		1 2 5 6	1 2 5 6			1 2		6	1 6				
Switch Phase															
Minimum Initial (s)										6.0			8.0	5.0	10.0
Minimum Split (s)										21.0			23.0	20.0	25.0
Total Split (s)										21.0			23.0	20.0	56.0
Total Split (%)										17.5%			19%	17%	47%
Maximum Green (s)										15.0			17.0	14.0	47.0
Yellow Time (s)										3.0			3.0	3.0	3.0
All-Red Time (s)										3.0			3.0	3.0	6.0
Lost Time Adjust (s)										-2.0					
Total Lost Time (s)										4.0					
Lead/Lag										Lag			Lead	Lag	Lead
Lead-Lag Optimize?										Yes					
Vehicle Extension (s)										2.0			2.0	4.0	2.0
Recall Mode										None			C-Max	None	None
Walk Time (s)										7.0			6.0	7.0	7.0
Flash Dont Walk (s)										7.0			7.0	7.0	9.0
Pedestrian Calls (#/hr)										0			0	0	0
Act Effct Green (s)	120.0	120.0		120.0	120.0			47.7		15.8	47.5				
Actuated g/C Ratio	1.00	1.00		1.00	1.00			0.40		0.13	0.40				
v/c Ratio	0.09	0.16		0.04	0.20			0.70		0.64	0.16				
Control Delay	0.2	0.1		0.1	0.2			36.1		63.8	25.8				
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0				
Total Delay	0.2	0.1		0.1	0.2			36.1		63.8	25.8				
LOS	A	A		A	A			D		E	C				
Approach Delay		0.1			0.2			36.1			41.0				
Approach LOS		A			A			D			D				
Queue Length 50th (ft)	0	0		0	0			296		97	53				
Queue Length 95th (ft)	m0	0		m0	0			#408		165	87				
Internal Link Dist (ft)		44			65			565			407				
Turn Bay Length (ft)										180					
Base Capacity (vph)	752	1823		873	1707			1207		222	1200				
Starvation Cap Reductn	0	0		0	0			0		0	0				
Spillback Cap Reductn	0	0		0	0			0		0	0				
Storage Cap Reductn	0	0		0	0			0		0	0				
Reduced v/c Ratio	0.09	0.16		0.04	0.20			0.70		0.59	0.17				

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 37 (31%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 23.1
 Intersection LOS: C
 Intersection Capacity Utilization 74.4%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 5: Commonwealth Avenue & Washington Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø6
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↔	↔		
Traffic Volume (vph)	24	482	0	0	362	6	0	32	63	0	0	0		
Future Volume (vph)	24	482	0	0	362	6	0	32	63	0	0	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Storage Length (ft)	0		0	0		0	0		114	0		0		
Storage Lanes	1		0	0		0	0		1	0		0		
Taper Length (ft)	25			25			25			25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor	0.69				0.99				0.83					
Frt					0.998				0.850					
Flt Protected	0.950													
Satd. Flow (prot)	1624	1644	0	0	1465	0	0	1660	1283	0	0	0		
Flt Permitted	0.537													
Satd. Flow (perm)	630	1644	0	0	1465	0	0	1660	1061	0	0	0		
Right Turn on Red			Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)					1				109					
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		145			359			458			887			
Travel Time (s)		3.3			8.2			10.4			20.2			
Confl. Peds. (#/hr)	175					175			36					
Confl. Bikes (#/hr)									1					
Peak Hour Factor	0.96	0.96	0.96	0.97	0.97	0.97	0.87	0.87	0.87	0.92	0.92	0.92		
Heavy Vehicles (%)	0%	4%	0%	0%	4%	0%	0%	3%	2%	2%	2%	2%		
Parking (#/hr)					0	0			0					
Adj. Flow (vph)	25	502	0	0	373	6	0	37	72	0	0	0		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	25	502	0	0	379	0	0	37	72	0	0	0		
Turn Type	Perm	NA			NA			NA	custom					
Protected Phases		1 2 5 6!			5			1 2!	2!				1	6
Permitted Phases	1 2 5 6!								1					
Detector Phase	1 2 5 6	1 2 5 6			5			1 2	2					
Switch Phase														
Minimum Initial (s)					10.0				5.0				8.0	6.0
Minimum Split (s)					25.0				20.0				23.0	21.0
Total Split (s)					56.0				20.0				23.0	21.0
Total Split (%)					46.7%				16.7%				19%	18%
Maximum Green (s)					47.0				14.0				17.0	15.0
Yellow Time (s)					3.0				3.0				3.0	3.0
All-Red Time (s)					6.0				3.0				3.0	3.0
Lost Time Adjust (s)					0.0				0.0					
Total Lost Time (s)					9.0				6.0					
Lead/Lag					Lead				Lag				Lead	Lag
Lead-Lag Optimize?														Yes
Vehicle Extension (s)					2.0				4.0				2.0	2.0
Recall Mode					None				None				C-Max	None
Walk Time (s)					7.0				7.0				6.0	7.0
Flash Dont Walk (s)					9.0				7.0				7.0	7.0
Pedestrian Calls (#/hr)					0				0				0	0
Act Effct Green (s)	120.0	120.0			39.5			45.7	39.7					
Actuated g/C Ratio	1.00	1.00			0.33			0.38	0.33					
v/c Ratio	0.04	0.31			0.79			0.06	0.16					
Control Delay	0.1	0.5			47.7			28.4	2.7					
Queue Delay	0.0	0.0			0.0			0.0	0.0					
Total Delay	0.1	0.5			47.7			28.4	2.7					
LOS	A	A			D			C	A					
Approach Delay		0.5			47.7			11.4						
Approach LOS		A			D			B						
Queue Length 50th (ft)	0	0			256			19	0					
Queue Length 95th (ft)	m0	0			351			45	11					
Internal Link Dist (ft)		65			279			378			807			
Turn Bay Length (ft)									114					
Base Capacity (vph)	623	1625			574			632	450					
Starvation Cap Reductn	0	0			0			0	0					
Spillback Cap Reductn	0	0			0			0	0					
Storage Cap Reductn	0	0			0			0	0					
Reduced v/c Ratio	0.04	0.31			0.66			0.06	0.16					


















Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 37 (31%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 19.3
 Intersection Capacity Utilization 49.9%
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.











Splits and Phases: 6: East Carriage Road & Washington Street



HCM Unsignalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Sign Control		Stop			Yield				Stop			Stop	
Traffic Volume (vph)	4	28	14	28	16	1	1	7	7	1	16	14	12
Future Volume (vph)	4	28	14	28	16	1	1	7	7	1	16	14	12
Peak Hour Factor	0.70	0.70	0.70	0.95	0.95	0.95	0.50	0.50	0.50	0.50	0.95	0.95	0.95
Hourly flow rate (vph)	6	40	20	29	17	1	0	14	14	2	17	15	13
Direction, Lane #	EB 1	WB 1	NB 1	SB 1									
Volume Total (vph)	66	47	30	45									
Volume Left (vph)	6	29	14	17									
Volume Right (vph)	20	1	2	13									
Hadj (s)	-0.16	0.15	0.16	-0.06									
Departure Headway (s)	4.0	4.3	4.4	4.1									
Degree Utilization, x	0.07	0.06	0.04	0.05									
Capacity (veh/h)	887	820	795	847									
Control Delay (s)	7.3	7.5	7.5	7.3									
Approach Delay (s)	7.3	7.5	7.5	7.3									
Approach LOS	A	A	A	A									
Intersection Summary													
Delay				7.4									
Level of Service				A									
Intersection Capacity Utilization			26.4%		ICU Level of Service				A				
Analysis Period (min)			15										

HCM Unsignalized Intersection Capacity Analysis

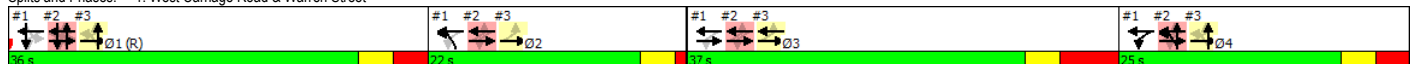
						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	45	0	0	284	45
Future Volume (Veh/h)	0	45	0	0	284	45
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.70	0.70	0.92	0.92	0.81	0.81
Hourly flow rate (vph)	0	64	0	0	351	56
Pedestrians	3					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				487	380	
pX, platoon unblocked						
vC, conflicting volume	382	206	410			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	382	206	410			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	92	100			
cM capacity (veh/h)	597	804	1157			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	64	0	0	234	173	
Volume Left	0	0	0	0	0	
Volume Right	64	0	0	0	56	
cSH	804	1700	1700	1700	1700	
Volume to Capacity	0.08	0.00	0.00	0.14	0.10	
Queue Length 95th (ft)	6	0	0	0	0	
Control Delay (s)	9.9	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	9.9	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			19.7%	ICU Level of Service	A	
Analysis Period (min)			15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕				↕	↕
Traffic Volume (vph)	0	270	12	20	460	0	20	0	0	164	48	74
Future Volume (vph)	0	270	12	20	460	0	20	0	0	164	48	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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									0.965	
Frt		0.994									0.972	
Fit Protected				0.950			0.950					
Satd. Flow (prot)	0	1502	0	1624	1693	0	1624	0	0	0	1444	0
Fit Permitted				0.082			0.950				0.972	
Satd. Flow (perm)	0	1502	0	140	1693	0	1624	0	0	0	1444	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		2										
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		307			119			412			462	
Travel Time (s)		7.0			2.7			9.4			10.5	
Confl. Peds. (#/hr)			67	67								
Peak Hour Factor	0.96	0.96	0.96	0.97	0.97	0.97	0.79	0.79	0.79	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		0	0							0	0	0
Adj. Flow (vph)	0	281	13	21	474	0	25	0	0	171	50	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	294	0	21	474	0	25	0	0	0	298	0
Turn Type		NA		custom	NA		Prot			Perm	NA	
Protected Phases		3		4	1 2 3 4!		2!				1!	
Permitted Phases				1 2 3!	1 2!					1!		
Detector Phase		3		4	1 2 3 4		2			1	1	
Switch Phase												
Minimum Initial (s)		8.0		8.0			8.0			8.0	8.0	
Minimum Split (s)		30.0		14.0			12.0			14.0	14.0	
Total Split (s)		37.0		25.0			22.0			36.0	36.0	
Total Split (%)		30.8%		20.8%			18.3%			30.0%	30.0%	
Maximum Green (s)		29.0		19.0			18.0			30.0	30.0	
Yellow Time (s)		3.0		3.0			3.0			3.0	3.0	
All-Red Time (s)		5.0		3.0			1.0			3.0	3.0	
Lost Time Adjust (s)		-4.0		-2.0			0.0			-2.0	-2.0	
Total Lost Time (s)		4.0		4.0			4.0			4.0	4.0	
Lead/Lag		Lead		Lag			Lag			Lead	Lead	
Lead-Lag Optimize?				Yes			Yes					
Vehicle Extension (s)		1.0		1.0			1.0			1.0	1.0	
Recall Mode		None		None			Min			C-Max	C-Max	
Walk Time (s)		8.0										
Flash Dont Walk (s)		14.0										
Pedestrian Calls (#/hr)		104										
Act Effct Green (s)		30.4		112.0	120.0		8.4				48.6	
Actuated g/C Ratio		0.25		0.93	1.00		0.07				0.40	
v/c Ratio		0.77		0.06	0.28		0.22				0.51	
Control Delay		55.3		0.7	0.4		57.4				32.5	
Queue Delay		0.0		0.7	0.0		0.0				0.0	
Total Delay		55.3		1.4	0.4		57.4				32.5	
LOS		E		A	A		E				C	
Approach Delay		55.3			0.4			57.4			32.5	
Approach LOS		E			A			E			C	
Queue Length 50th (ft)		206		0	0		19				175	
Queue Length 95th (ft)		308		m3	0		41				292	
Internal Link Dist (ft)		227			39			332			382	
Turn Bay Length (ft)												
Base Capacity (vph)		414		393	1678		243				584	
Starvation Cap Reductn		0		260	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		0.16	0.28		0.10				0.51	

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 70 (58%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 24.8
 Intersection Capacity Utilization 49.6%
 Intersection LOS: C
 ICU Level of Service A
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 1: West Carriage Road & Warren Street

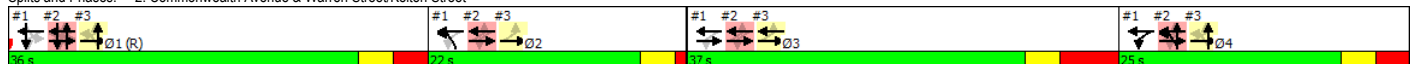


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2	Ø3
Lane Configurations	↖	↗		↖	↗			↕			↕			
Traffic Volume (vph)	55	158	221	11	218	8	164	357	24	9	345	98		
Future Volume (vph)	55	158	221	11	218	8	164	357	24	9	345	98		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	11	12	12	11	12	12	12	12	12	12	12		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95		
Ped Bike Factor	0.99	0.99		0.99	1.00									
Frt		0.913			0.995			0.993			0.967			
Fit Protected	0.950			0.950				0.985			0.999			
Satd. Flow (prot)	1593	1482	0	1624	1644	0	0	3148	0	0	3115	0		
Fit Permitted	0.613			0.529				0.649			0.942			
Satd. Flow (perm)	1021	1482	0	898	1644	0	0	2074	0	0	2937	0		
Right Turn on Red			No			No			Yes			No		
Satd. Flow (RTOR)								5						
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		119			126			1051			519			
Travel Time (s)		2.7			2.9			23.9			11.8			
Confl. Peds. (#/hr)	30		37	37		30								
Peak Hour Factor	0.96	0.96	0.96	0.97	0.97	0.97	0.96	0.96	0.96	0.98	0.98	0.98		
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	1%	1%	0%	0%	1%	0%		
Adj. Flow (vph)	57	165	230	11	225	8	171	372	25	9	352	100		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	57	395	0	11	233	0	0	568	0	0	461	0		
Turn Type	Perm	NA		Perm	NA		D,P+P	NA		Perm	NA			
Protected Phases		1 2 3 4!		1 2 3 4!			4!	1 4!			1!		2	3
Permitted Phases	1 2 3 4!			1 2 3 4!			1!			1!				
Detector Phase	1 2 3 4	1 2 3 4		1 2 3 4	1 2 3 4		4	1 4		1	1			
Switch Phase														
Minimum Initial (s)							8.0			8.0	8.0		8.0	8.0
Minimum Split (s)							14.0			14.0	14.0		12.0	30.0
Total Split (s)							25.0			36.0	36.0		22.0	37.0
Total Split (%)							20.8%			30.0%	30.0%		18%	31%
Maximum Green (s)							19.0			30.0	30.0		18.0	29.0
Yellow Time (s)							3.0			3.0	3.0		3.0	3.0
All-Red Time (s)							3.0			3.0	3.0		1.0	5.0
Lost Time Adjust (s)													-2.0	
Total Lost Time (s)													4.0	
Lead/Lag							Lag		Lead	Lead		Lag	Lead	
Lead-Lag Optimize?							Yes					Yes		
Vehicle Extension (s)							1.0			1.0	1.0		1.0	1.0
Recall Mode							None			C-Max	C-Max		Min	None
Walk Time (s)														8.0
Flash Dont Walk (s)														14.0
Pedestrian Calls (#/hr)														104
Act Effct Green (s)	120.0	120.0		120.0	120.0			65.2			48.6			
Actuated g/C Ratio	1.00	1.00		1.00	1.00			0.54			0.40			
v/c Ratio	0.06	0.27		0.01	0.14			0.44			0.39			
Control Delay	0.1	0.3		0.0	0.1			14.8			27.8			
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0			
Total Delay	0.1	0.3		0.0	0.1			14.8			27.8			
LOS	A	A		A	A			B			C			
Approach Delay		0.3			0.1			14.8			27.8			
Approach LOS		A			A			B			C			
Queue Length 50th (ft)	0	0		0	0			116			134			
Queue Length 95th (ft)	m0	0		m0	0			161			198			
Internal Link Dist (ft)		39			46			971			439			
Turn Bay Length (ft)														
Base Capacity (vph)	1012	1469		890	1630			1366			1188			
Starvation Cap Reductn	0	0		0	0			0			0			
Spillback Cap Reductn	0	0		0	0			0			0			
Storage Cap Reductn	0	0		0	0			0			0			
Reduced v/c Ratio	0.06	0.27		0.01	0.14			0.42			0.39			

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 70 (58%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 12.4
 Intersection LOS: B
 Intersection Capacity Utilization 77.6%
 ICU Level of Service D
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 2: Commonwealth Avenue & Warren Street/Kelton Street

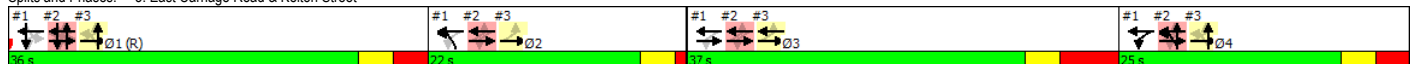


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø4
Lane Configurations	↔	↕			↕			↕							
Traffic Volume (vph)	19	172	0	0	236	10	1	8	7	0	0	0			
Future Volume (vph)	19	172	0	0	236	10	1	8	7	0	0	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane 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				1.00										
Frt					0.995			0.941							
Fit Protected	0.950							0.998							
Satd. Flow (prot)	1593	1693	0	0	1525	0	0	1445	0	0	0	0			
Fit Permitted	0.547							0.998							
Satd. Flow (perm)	876	1693	0	0	1525	0	0	1445	0	0	0	0			
Right Turn on Red			Yes			Yes			Yes			Yes			
Satd. Flow (RTOR)					2			10							
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		126			367			366			364				
Travel Time (s)		2.9			8.3			8.3			8.3				
Confl. Peds. (#/hr)	30					30									
Peak Hour Factor	0.96	0.96	0.96	0.98	0.98	0.98	0.68	0.68	0.68	0.92	0.92	0.92			
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%			
Parking (#/hr)					0	0	0	0	0						
Adj. Flow (vph)	20	179	0	0	241	10	1	12	10	0	0	0			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	20	179	0	0	251	0	0	23	0	0	0	0			
Turn Type	Perm	NA			NA		Perm	NA							
Protected Phases		1 2 3 4!			3			1 4!					1	2	4
Permitted Phases	1 2 3 4!						1 4!								
Detector Phase	1 2 3 4	1 2 3 4			3		1 4	1 4							
Switch Phase															
Minimum Initial (s)					8.0								8.0	8.0	8.0
Minimum Split (s)					30.0								14.0	12.0	14.0
Total Split (s)					37.0								36.0	22.0	25.0
Total Split (%)					30.8%								30%	18%	21%
Maximum Green (s)					29.0								30.0	18.0	19.0
Yellow Time (s)					3.0								3.0	3.0	3.0
All-Red Time (s)					5.0								3.0	1.0	3.0
Lost Time Adjust (s)					-4.0										
Total Lost Time (s)					4.0										
Lead/Lag					Lead								Lead	Lag	Lag
Lead-Lag Optimize?														Yes	Yes
Vehicle Extension (s)					1.0								1.0	1.0	1.0
Recall Mode					None								C-Max	Min	None
Walk Time (s)					8.0										
Flash Dont Walk (s)					14.0										
Pedestrian Calls (#/hr)					104										
Act Effct Green (s)	120.0	120.0			30.4			69.2							
Actuated g/C Ratio	1.00	1.00			0.25			0.58							
v/c Ratio	0.02	0.11			0.65			0.03							
Control Delay	0.1	0.1			47.8			8.6							
Queue Delay	0.0	0.0			0.0			0.0							
Total Delay	0.1	0.1			47.8			8.6							
LOS	A	A			D			A							
Approach Delay		0.1			47.8			8.6							
Approach LOS		A			D			A							
Queue Length 50th (ft)	0	0			169			4							
Queue Length 95th (ft)	m0	0			259			12							
Internal Link Dist (ft)		46			287			286			284				
Turn Bay Length (ft)															
Base Capacity (vph)	868	1678			420			833							
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	0.02	0.11			0.60			0.03							

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 70 (58%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 25.8
 Intersection Capacity Utilization 30.9%
 Intersection LOS: C
 ICU Level of Service A
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 3: East Carriage Road & Kelton Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø6
Lane Configurations		↕			↕						↕				
Traffic Volume (vph)	3	349	7	11	252	12	0	0	0	0	30	27			
Future Volume (vph)	3	349	7	11	252	12	0	0	0	0	30	27			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
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			0.98						0.92				
Frt		0.997			0.994						0.937				
Fit Protected					0.998										
Satd. Flow (prot)	0	1483	0	0	1620	0	0	0	0	0	1324	0			
Fit Permitted		0.984			0.986										
Satd. Flow (perm)	0	1459	0	0	1592	0	0	0	0	0	1324	0			
Right Turn on Red			Yes			Yes			Yes			No			
Satd. Flow (RTOR)		1													
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		1136			151			491			526				
Travel Time (s)		25.8			3.4			11.2			12.0				
Confl. Peds. (#/hr)	126		67	67		126						50			
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.92			
Heavy Vehicles (%)	0%	3%	0%	0%	3%	0%	2%	2%	2%	0%	0%	0%			
Parking (#/hr)	0	0	0							0	0	0			
Adj. Flow (vph)	3	379	8	11	263	13	0	0	0	0	33	29			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	390	0	0	287	0	0	0	0	0	62	0			
Turn Type	Perm	NA		Perm	NA						NA				
Protected Phases		5			1 2 5 6!						16!		1	2	6
Permitted Phases	5			1 2 5 6!											
Detector Phase	5	5		1 2 5 6	1 2 5 6						16				
Switch Phase															
Minimum Initial (s)	10.0	10.0											8.0	5.0	6.0
Minimum Split (s)	25.0	25.0											25.0	20.0	21.0
Total Split (s)	54.0	54.0											25.0	20.0	21.0
Total Split (%)	45.0%	45.0%											21%	17%	18%
Maximum Green (s)	45.0	45.0											19.0	14.0	15.0
Yellow Time (s)	3.0	3.0											3.0	3.0	3.0
All-Red Time (s)	6.0	6.0											3.0	3.0	3.0
Lost Time Adjust (s)															
Total Lost Time (s)															
Lead/Lag	Lead	Lead											Lead	Lag	Lag
Lead-Lag Optimize?															Yes
Vehicle Extension (s)	2.0	2.0											2.0	4.0	2.0
Recall Mode	None	None											C-Max	None	None
Walk Time (s)	7.0	7.0											7.0	7.0	7.0
Flash Dont Walk (s)	9.0	9.0											12.0	7.0	7.0
Pedestrian Calls (#/hr)	0	0											0	0	0
Act Effct Green (s)		44.2			120.0						48.3				
Actuated g/C Ratio		0.37			1.00						0.40				
v/c Ratio		0.72			0.18						0.12				
Control Delay		40.3			0.2						26.2				
Queue Delay		0.0			0.0						0.0				
Total Delay		40.3			0.2						26.2				
LOS		D			A						C				
Approach Delay		40.3			0.2						26.2				
Approach LOS		D			A						C				
Queue Length 50th (ft)		246			0						31				
Queue Length 95th (ft)		349			0						66				
Internal Link Dist (ft)		1056			71			411			446				
Turn Bay Length (ft)															
Base Capacity (vph)		608			1580						528				
Starvation Cap Reductn		0			0						0				
Spillback Cap Reductn		0			0						0				
Storage Cap Reductn		0			0						0				
Reduced v/c Ratio		0.64			0.18						0.12				

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 23 (19%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 23.6
 Intersection LOS: C
 Intersection Capacity Utilization 46.4%
 ICU Level of Service A
 Analysis Period (min) 15
 ! Phase conflict between lane groups.

Splits and Phases: 4: West Carriage Road & Washington Street

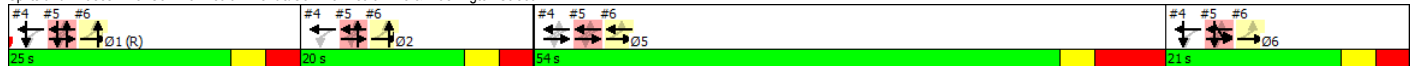


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø5
Lane Configurations	↖	↗		↖	↗			↖	↗		↖	↗			
Traffic Volume (vph)	52	283	14	38	275	30	0	333	93	155	402	0			
Future Volume (vph)	52	283	14	38	275	30	0	333	93	155	402	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width (ft)	12	16	12	12	16	12	12	11	12	11	11	12			
Storage Length (ft)	0		0	0		0	0		0	180		0			
Storage Lanes	1		0	1		0	0		0	1		0			
Taper Length (ft)	25			25			25			25					
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00			
Ped Bike Factor	0.85	0.99		0.92	0.98			1.00							
Frt		0.993			0.985			0.967							
Flt Protected	0.950			0.950						0.950					
Satd. Flow (prot)	1624	1853	0	1624	1829	0	0	2979	0	1570	3110	0			
Flt Permitted	0.566			0.565						0.950					
Satd. Flow (perm)	820	1853	0	888	1829	0	0	2979	0	1570	3110	0			
Right Turn on Red			Yes			Yes			No			Yes			
Satd. Flow (RTOR)															
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		151			146			543			536				
Travel Time (s)		3.4			3.3			12.3			12.2				
Confl. Peds. (#/hr)	126		67	67		126									
Confl. Bikes (#/hr)								1							
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.98	0.98	0.98	0.94	0.94	0.94			
Heavy Vehicles (%)	0%	3%	7%	0%	2%	0%	0%	1%	4%	0%	1%	0%			
Adj. Flow (vph)	57	308	15	40	289	32	0	340	95	165	428	0			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	57	323	0	40	321	0	0	435	0	165	428	0			
Turn Type	Perm	NA		Perm	NA			NA		Prot	NA				
Protected Phases		1 2 5 6!			1 2 5 6!			1 2!		6!	1 6!		1	2	5
Permitted Phases	1 2 5 6!			1 2 5 6!											
Detector Phase	1 2 5 6	1 2 5 6		1 2 5 6	1 2 5 6			1 2		6	1 6				
Switch Phase															
Minimum Initial (s)										6.0			8.0	5.0	10.0
Minimum Split (s)										21.0			25.0	20.0	25.0
Total Split (s)										21.0			25.0	20.0	54.0
Total Split (%)										17.5%			21%	17%	45%
Maximum Green (s)										15.0			19.0	14.0	45.0
Yellow Time (s)										3.0			3.0	3.0	3.0
All-Red Time (s)										3.0			3.0	3.0	6.0
Lost Time Adjust (s)										-2.0					
Total Lost Time (s)										4.0					
Lead/Lag										Lag			Lead	Lag	Lead
Lead-Lag Optimize?										Yes					
Vehicle Extension (s)										2.0			2.0	4.0	2.0
Recall Mode										None			C-Max	None	None
Walk Time (s)										7.0			7.0	7.0	7.0
Flash Dont Walk (s)										7.0			12.0	7.0	9.0
Pedestrian Calls (#/hr)										0			0	0	0
Act Effct Green (s)	120.0	120.0		120.0	120.0			47.3		16.5	48.3				
Actuated g/C Ratio	1.00	1.00		1.00	1.00			0.39		0.14	0.40				
v/c Ratio	0.07	0.17		0.05	0.18			0.37		0.76	0.34				
Control Delay	0.1	0.2		0.1	0.2			28.5		72.8	27.3				
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0				
Total Delay	0.1	0.2		0.1	0.2			28.5		72.8	27.3				
LOS	A	A		A	A			C		E	C				
Approach Delay		0.2			0.2			28.5			40.0				
Approach LOS		A			A			C			D				
Queue Length 50th (ft)	0	0		0	0			130		124	125				
Queue Length 95th (ft)	m0	0		m0	0			184		#229	176				
Internal Link Dist (ft)		71			66			463			456				
Turn Bay Length (ft)										180					
Base Capacity (vph)	814	1839		881	1815			1185		222	1242				
Starvation Cap Reductn	0	0		0	0			0		0	0				
Spillback Cap Reductn	0	0		0	0			0		0	0				
Storage Cap Reductn	0	0		0	0			0		0	0				
Reduced v/c Ratio	0.07	0.18		0.05	0.18			0.37		0.74	0.34				

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 23 (19%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 20.5
 Intersection LOS: C
 Intersection Capacity Utilization 61.8%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 5: Commonwealth Avenue/Commonwealth Ave & Washington Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø6
Lane Configurations	↑	↑			↑			↑	↑					
Traffic Volume (vph)	18	513	0	0	343	12	0	23	41	0	0	0		
Future Volume (vph)	18	513	0	0	343	12	0	23	41	0	0	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Storage Length (ft)	0		0	0		0	0		114	0		0		
Storage Lanes	1		0	0		0	0		1	0		0		
Taper Length (ft)	25			25			25			25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor	0.72				0.98				0.82					
Frt					0.995				0.850					
Fit Protected	0.950													
Satd. Flow (prot)	1624	1676	0	0	1477	0	0	1710	1308	0	0	0		
Fit Permitted	0.539													
Satd. Flow (perm)	663	1676	0	0	1477	0	0	1710	1066	0	0	0		
Right Turn on Red			Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)				2					109					
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		146			345			669			869			
Travel Time (s)		3.3			7.8			15.2			19.8			
Confl. Peds. (#/hr)	126					126			39					
Confl. Bikes (#/hr)									1					
Peak Hour Factor	0.96	0.96	0.96	0.95	0.95	0.95	0.71	0.71	0.71	0.92	0.92	0.92		
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	2%	2%	2%		
Parking (#/hr)					0	0			0					
Adj. Flow (vph)	19	534	0	0	361	13	0	32	58	0	0	0		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	19	534	0	0	374	0	0	32	58	0	0	0		
Turn Type	Perm	NA			NA			NA	custom					
Protected Phases		1 2 5 6!			5			1 2!	2!				1	6
Permitted Phases	1 2 5 6!													
Detector Phase	1 2 5 6	1 2 5 6			5			1 2	2					
Switch Phase														
Minimum Initial (s)					10.0				5.0				8.0	6.0
Minimum Split (s)					25.0				20.0				25.0	21.0
Total Split (s)					54.0				20.0				25.0	21.0
Total Split (%)					45.0%				16.7%				21%	18%
Maximum Green (s)					45.0				14.0				19.0	15.0
Yellow Time (s)					3.0				3.0				3.0	3.0
All-Red Time (s)					6.0				3.0				3.0	3.0
Lost Time Adjust (s)					-5.0				-2.0					
Total Lost Time (s)					4.0				4.0					
Lead/Lag					Lead				Lag				Lead	Lag
Lead-Lag Optimize?														Yes
Vehicle Extension (s)					2.0				4.0				2.0	2.0
Recall Mode					None				None				C-Max	None
Walk Time (s)					7.0				7.0				7.0	7.0
Flash Dont Walk (s)					9.0				7.0				12.0	7.0
Pedestrian Calls (#/hr)					0				0				0	0
Act Effct Green (s)	120.0	120.0			44.2			47.3	43.3					
Actuated g/C Ratio	1.00	1.00			0.37			0.39	0.36					
v/c Ratio	0.03	0.32			0.69			0.05	0.12					
Control Delay	0.1	0.5			38.1			26.0	0.7					
Queue Delay	0.0	0.0			0.0			0.0	0.0					
Total Delay	0.1	0.5			38.1			26.0	0.7					
LOS	A	A			D			C	A					
Approach Delay		0.5			38.1			9.7						
Approach LOS		A			D			A						
Queue Length 50th (ft)	0	0			231			16	0					
Queue Length 95th (ft)	0	0			328			31	0					
Internal Link Dist (ft)		66			265			589			789			
Turn Bay Length (ft)									114					
Base Capacity (vph)	658	1664			616			680	490					
Starvation Cap Reductn	0	0			0			0	0					
Spillback Cap Reductn	0	0			0			0	0					
Storage Cap Reductn	0	0			0			0	0					
Reduced v/c Ratio	0.03	0.32			0.61			0.05	0.12					

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 23 (19%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 15.2
 Intersection Capacity Utilization 52.5%
 Analysis Period (min) 15

















Intersection LOS: B
 ICU Level of Service A

! Phase conflict between lane groups.

Splits and Phases: 6: East Carriage Road & Washington Street



HCM Unsignalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Sign Control		Stop			Yield				Stop			Stop	
Traffic Volume (vph)	9	22	19	43	26	10	2	5	7	4	30	22	8
Future Volume (vph)	9	22	19	43	26	10	2	5	7	4	30	22	8
Peak Hour Factor	0.75	0.75	0.75	0.96	0.96	0.96	0.90	0.90	0.90	0.90	0.97	0.97	0.97
Hourly flow rate (vph)	12	29	25	45	27	10	0	6	8	4	31	23	8
Direction, Lane #	EB 1	WB 1	NB 1	SB 1									
Volume Total (vph)	66	82	18	62									
Volume Left (vph)	12	45	6	31									
Volume Right (vph)	25	10	4	8									
Hadj (s)	-0.19	0.04	-0.07	0.02									
Departure Headway (s)	4.0	4.2	4.2	4.3									
Degree Utilization, x	0.07	0.10	0.02	0.07									
Capacity (veh/h)	881	840	812	814									
Control Delay (s)	7.3	7.6	7.3	7.6									
Approach Delay (s)	7.3	7.6	7.3	7.6									
Approach LOS	A	A	A	A									
Intersection Summary													
Delay				7.5									
Level of Service				A									
Intersection Capacity Utilization				28.6%	ICU Level of Service								A
Analysis Period (min)				15									

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑		↑↑	↑↑	
Traffic Volume (veh/h)	0	56	0	0	505	79
Future Volume (Veh/h)	0	56	0	0	505	79
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.92	0.92	0.96	0.96
Hourly flow rate (vph)	0	75	0	0	526	82
Pedestrians	2					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)				536		
pX, platoon unblocked						
vC, conflicting volume	569	306	610			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	569	306	610			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	89	100			
cM capacity (veh/h)	456	695	977			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	75	0	0	351	257	
Volume Left	0	0	0	0	0	
Volume Right	75	0	0	0	82	
cSH	695	1700	1700	1700	1700	
Volume to Capacity	0.11	0.00	0.00	0.21	0.15	
Queue Length 95th (ft)	9	0	0	0	0	
Control Delay (s)	10.8	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	10.8	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization		26.6%		ICU Level of Service	A	
Analysis Period (min)		15				

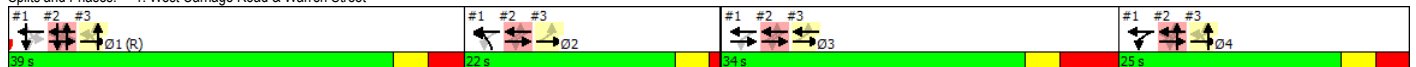
- No-Build (2026) Condition

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕				↕	↕
Traffic Volume (vph)	0	224	14	12	613	0	35	0	0	113	18	69
Future Volume (vph)	0	224	14	12	613	0	35	0	0	113	18	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.992									0.954	
Fit Protected				0.950			0.950				0.973	
Satd. Flow (prot)	0	1458	0	1425	1710	0	1562	0	0	0	1410	0
Fit Permitted				0.093			0.950				0.973	
Satd. Flow (perm)	0	1458	0	140	1710	0	1562	0	0	0	1410	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		2										
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		329			104			401			442	
Travel Time (s)		7.5			2.4			9.1			10.0	
Confl. Peds. (#/hr)			96	96								
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.81	0.81	0.81	0.92	0.92	0.92
Heavy Vehicles (%)	0%	3%	3%	14%	0%	0%	4%	0%	0%	0%	7%	2%
Parking (#/hr)		0	0							0	0	0
Adj. Flow (vph)	0	238	15	13	659	0	43	0	0	123	20	75
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	253	0	13	659	0	43	0	0	0	218	0
Turn Type		NA		custom	NA		Prot			Perm	NA	
Protected Phases		3		4	1 2 3 4!		2!				1!	
Permitted Phases				1 2 3!	1 2!					1!		
Detector Phase		3		4	1 2 3 4		2			1	1	
Switch Phase												
Minimum Initial (s)		8.0		8.0			8.0			8.0	8.0	
Minimum Split (s)		30.0		14.0			12.0			14.0	14.0	
Total Split (s)		34.0		25.0			22.0			39.0	39.0	
Total Split (%)		28.3%		20.8%			18.3%			32.5%	32.5%	
Maximum Green (s)		26.0		19.0			18.0			33.0	33.0	
Yellow Time (s)		3.0		3.0			3.0			3.0	3.0	
All-Red Time (s)		5.0		3.0			1.0			3.0	3.0	
Lost Time Adjust (s)		0.0		0.0			0.0			0.0	0.0	
Total Lost Time (s)		8.0		6.0			4.0			6.0	6.0	
Lead/Lag		Lead		Lag			Lag			Lead	Lead	
Lead-Lag Optimize?				Yes			Yes					
Vehicle Extension (s)		1.0		1.0			1.0			1.0	1.0	
Recall Mode		None		None			Min			C-Max	C-Max	
Walk Time (s)		8.0										
Flash Dont Walk (s)		14.0										
Pedestrian Calls (#/hr)		162										
Act Effct Green (s)		24.4		108.0	120.0		9.1				43.5	
Actuated g/C Ratio		0.20		0.90	1.00		0.08				0.36	
v/c Ratio		0.85		0.04	0.39		0.36				0.43	
Control Delay		71.0		0.6	0.6		61.1				33.0	
Queue Delay		0.0		0.0	0.0		0.0				0.0	
Total Delay		71.0		0.6	0.6		61.1				33.0	
LOS		E		A	A		E				C	
Approach Delay		71.0			0.6			61.1			33.0	
Approach LOS		E			A			E			C	
Queue Length 50th (ft)		186		0	0		32				128	
Queue Length 95th (ft)		#318		m0	0		62				213	
Internal Link Dist (ft)		249			24			321			362	
Turn Bay Length (ft)												
Base Capacity (vph)		317		329	1698		234				511	
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		0.80		0.04	0.39		0.18				0.43	

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 46 (38%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 23.8 Intersection LOS: C
 Intersection Capacity Utilization 57.2% ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 1: West Carriage Road & Warren Street

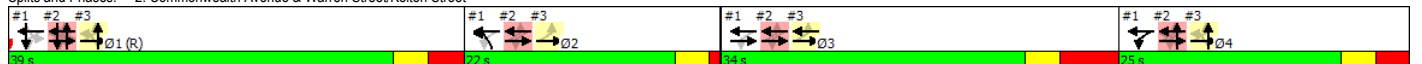


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2	Ø3	Ø4
Lane Configurations	↔	↕		↔	↕		↔	↕		↔	↕				
Traffic Volume (vph)	49	145	143	20	177	10	380	626	16	3	179	71			
Future Volume (vph)	49	145	143	20	177	10	380	626	16	3	179	71			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width (ft)	12	11	12	12	11	12	12	12	12	12	12	12			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95			
Ped Bike Factor	0.99	0.98		0.99	1.00										
Frt		0.925			0.992			0.998			0.958				
Fit Protected	0.950			0.950				0.982			0.999				
Satd. Flow (prot)	1593	1482	0	1533	1637	0	0	3149	0	0	3028	0			
Fit Permitted	0.632			0.574				0.729			0.815				
Satd. Flow (perm)	1048	1482	0	913	1637	0	0	2338	0	0	2470	0			
Right Turn on Red			No			No			Yes			No			
Satd. Flow (RTOR)								2							
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		104			131			1035			514				
Travel Time (s)		2.4			3.0			23.5			11.7				
Confl. Peds. (#/hr)	46		66	66		46									
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.99	0.99	0.99	0.96	0.96	0.96			
Heavy Vehicles (%)	2%	3%	0%	6%	0%	0%	1%	1%	9%	0%	3%	2%			
Adj. Flow (vph)	52	154	152	22	190	11	384	632	16	3	186	74			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	52	306	0	22	201	0	0	1032	0	0	263	0			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA				
Protected Phases		1 2 3 4!			1 2 3 4!			1 4!			1!		2	3	4
Permitted Phases	1 2 3 4!			1 2 3 4!			1 4!			1!					
Detector Phase	1 2 3 4	1 2 3 4		1 2 3 4	1 2 3 4		1 4	1 4		1	1				
Switch Phase															
Minimum Initial (s)									8.0	8.0			8.0	8.0	8.0
Minimum Split (s)									14.0	14.0			12.0	30.0	14.0
Total Split (s)									39.0	39.0			22.0	34.0	25.0
Total Split (%)									32.5%	32.5%			18%	28%	21%
Maximum Green (s)									33.0	33.0			18.0	26.0	19.0
Yellow Time (s)									3.0	3.0			3.0	3.0	3.0
All-Red Time (s)									3.0	3.0			1.0	5.0	3.0
Lost Time Adjust (s)															-2.0
Total Lost Time (s)															4.0
Lead/Lag									Lead	Lead			Lag	Lead	Lag
Lead-Lag Optimize?													Yes		Yes
Vehicle Extension (s)									1.0	1.0			1.0	1.0	1.0
Recall Mode									C-Max	C-Max			Min	None	None
Walk Time (s)															8.0
Flash Dont Walk (s)															14.0
Pedestrian Calls (#/hr)															162
Act Effct Green (s)	120.0	120.0		120.0	120.0			70.5			45.5				
Actuated g/C Ratio	1.00	1.00		1.00	1.00			0.59			0.38				
v/c Ratio	0.05	0.21		0.02	0.12			0.75			0.28				
Control Delay	0.1	0.2		0.1	0.1			23.3			27.7				
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0				
Total Delay	0.1	0.2		0.1	0.1			23.3			27.7				
LOS	A	A		A	A			C			C				
Approach Delay		0.2			0.1			23.3			27.7				
Approach LOS		A			A			C			C				
Queue Length 50th (ft)	0	0		0	0			297			74				
Queue Length 95th (ft)	m0	m0		m0	m0			424			115				
Internal Link Dist (ft)		24			51			955			434				
Turn Bay Length (ft)															
Base Capacity (vph)	1048	1482		913	1637			1374			936				
Starvation Cap Reductn	0	0		0	0			0			0				
Spillback Cap Reductn	0	0		0	0			0			0				
Storage Cap Reductn	0	0		0	0			0			0				
Reduced v/c Ratio	0.05	0.21		0.02	0.12			0.75			0.28				

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 46 (38%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 16.8 Intersection LOS: B
 Intersection Capacity Utilization 80.7% ICU Level of Service D
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 2: Commonwealth Avenue & Warren Street/Kelton Street



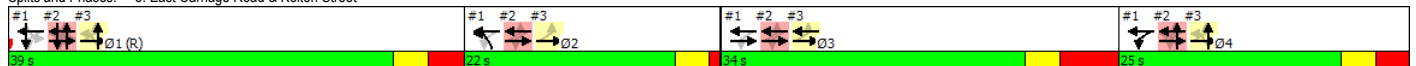
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø4
Lane Configurations	↖	↗			↖			↗							
Traffic Volume (vph)	12	151	0	0	205	10	2	15	7	0	0	0			
Future Volume (vph)	12	151	0	0	205	10	2	15	7	0	0	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane 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	0.92				0.99			0.960							
Fit Protected	0.950							0.996							
Satd. Flow (prot)	1624	1676	0	0	1518	0	0	1472	0	0	0	0			
Fit Permitted	0.584							0.996							
Satd. Flow (perm)	919	1676	0	0	1518	0	0	1472	0	0	0	0			
Right Turn on Red			Yes			Yes			Yes			Yes			
Satd. Flow (RTOR)				2				8							
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		131			358			349			367				
Travel Time (s)		3.0			8.1			7.9			8.3				
Confl. Peds. (#/hr)	46					46									
Peak Hour Factor	0.97	0.97	0.97	0.95	0.95	0.95	0.86	0.86	0.86	0.92	0.92	0.92			
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%			
Parking (#/hr)					0	0	0	0	0						
Adj. Flow (vph)	12	156	0	0	216	11	2	17	8	0	0	0			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	12	156	0	0	227	0	0	27	0	0	0	0			
Turn Type	Perm	NA			NA		Perm	NA							
Protected Phases		1 2 3 4!			3			1 4!					1	2	4
Permitted Phases	1 2 3 4!						1 4!								
Detector Phase	1 2 3 4	1 2 3 4			3		1 4	1 4							
Switch Phase															
Minimum Initial (s)					8.0								8.0	8.0	8.0
Minimum Split (s)					30.0								14.0	12.0	14.0
Total Split (s)					34.0								39.0	22.0	25.0
Total Split (%)					28.3%								33%	18%	21%
Maximum Green (s)					26.0								33.0	18.0	19.0
Yellow Time (s)					3.0								3.0	3.0	3.0
All-Red Time (s)					5.0								3.0	1.0	3.0
Lost Time Adjust (s)					0.0										
Total Lost Time (s)					8.0										
Lead/Lag					Lead								Lead	Lag	Lag
Lead-Lag Optimize?														Yes	Yes
Vehicle Extension (s)					1.0								1.0	1.0	1.0
Recall Mode					None								C-Max	Min	None
Walk Time (s)					8.0										
Flash Dont Walk (s)					14.0										
Pedestrian Calls (#/hr)					162										
Act Effct Green (s)	120.0	120.0			24.4			68.5							
Actuated g/C Ratio	1.00	1.00			0.20			0.57							
v/c Ratio	0.01	0.09			0.73			0.03							
Control Delay	0.0	0.1			58.9			9.9							
Queue Delay	0.0	0.0			0.0			0.0							
Total Delay	0.0	0.1			58.9			9.9							
LOS	A	A			E			A							
Approach Delay		0.1			58.9			9.9							
Approach LOS		A			E			A							
Queue Length 50th (ft)	0	0			162			6							
Queue Length 95th (ft)	0	m0			253			20							
Internal Link Dist (ft)		51			278			269			287				
Turn Bay Length (ft)															
Base Capacity (vph)	912	1664			330			843							
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	0.01	0.09			0.69			0.03							

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 46 (38%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 32.3
 Intersection Capacity Utilization 35.5%
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Intersection LOS: C
 ICU Level of Service A

Splits and Phases: 3: East Carriage Road & Kelton Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø6
Lane Configurations		↕			↕						↕				
Traffic Volume (vph)	3	422	17	7	267	8	0	0	0	0	17	32			
Future Volume (vph)	3	422	17	7	267	8	0	0	0	0	17	32			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
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			0.98						0.68				
Frt		0.995			0.996						0.911				
Fit Protected					0.999										
Satd. Flow (prot)	0	1450	0	0	1612	0	0	0	0	0	906	0			
Fit Permitted		0.984			0.990										
Satd. Flow (perm)	0	1427	0	0	1593	0	0	0	0	0	906	0			
Right Turn on Red			Yes			Yes			Yes			No			
Satd. Flow (RTOR)		2													
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		289			124			357			471				
Travel Time (s)		6.6			2.8			8.1			10.7				
Confl. Peds. (#/hr)	175		50	50		175						104			
Peak Hour Factor	0.95	0.95	0.95	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92			
Heavy Vehicles (%)	0%	5%	0%	0%	4%	0%	2%	2%	2%	0%	6%	4%			
Parking (#/hr)	0	0	0							0	0	0			
Adj. Flow (vph)	3	444	18	8	287	9	0	0	0	0	18	35			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	465	0	0	304	0	0	0	0	0	53	0			
Turn Type	Perm	NA		Perm	NA						NA				
Protected Phases		5			1 2 5 6!						16!		1	2	6
Permitted Phases	5			1 2 5 6!											
Detector Phase	5	5		1 2 5 6	1 2 5 6						16				
Switch Phase															
Minimum Initial (s)	10.0	10.0											8.0	5.0	6.0
Minimum Split (s)	25.0	25.0											23.0	20.0	21.0
Total Split (s)	56.0	56.0											23.0	20.0	21.0
Total Split (%)	46.7%	46.7%											19%	17%	18%
Maximum Green (s)	47.0	47.0											17.0	14.0	15.0
Yellow Time (s)	3.0	3.0											3.0	3.0	3.0
All-Red Time (s)	6.0	6.0											3.0	3.0	3.0
Lost Time Adjust (s)															
Total Lost Time (s)															
Lead/Lag	Lead	Lead											Lead	Lag	Lag
Lead-Lag Optimize?															Yes
Vehicle Extension (s)	2.0	2.0											2.0	4.0	2.0
Recall Mode	None	None											C-Max	None	None
Walk Time (s)	7.0	7.0											6.0	7.0	7.0
Flash Dont Walk (s)	9.0	9.0											7.0	7.0	7.0
Pedestrian Calls (#/hr)	0	0											0	0	0
Act Effct Green (s)		44.2			120.0						40.8				
Actuated g/C Ratio		0.37			1.00						0.34				
v/c Ratio		0.88			0.19						0.17				
Control Delay		54.5			0.3						31.5				
Queue Delay		0.0			0.0						0.0				
Total Delay		54.5			0.3						31.5				
LOS		D			A						C				
Approach Delay		54.5			0.3						31.5				
Approach LOS		D			A						C				
Queue Length 50th (ft)		320			0						30				
Queue Length 95th (ft)		#504			0						64				
Internal Link Dist (ft)		209			44			277			391				
Turn Bay Length (ft)															
Base Capacity (vph)		560			1579						305				
Starvation Cap Reductn		0			0						0				
Spillback Cap Reductn		0			0						0				
Storage Cap Reductn		0			0						0				
Reduced v/c Ratio		0.83			0.19						0.17				

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 37 (31%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 33.0
 Intersection Capacity Utilization 50.8%
 Intersection LOS: C
 ICU Level of Service A
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 ! Phase conflict between lane groups.

Splits and Phases: 4: West Carriage Road & Washington Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø5
Lane Configurations	↖	↗		↖	↗			↕		↖	↗				
Traffic Volume (vph)	76	308	38	37	275	71	0	724	121	139	204	0			
Future Volume (vph)	76	308	38	37	275	71	0	724	121	139	204	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width (ft)	12	16	12	12	16	12	12	11	12	11	11	12			
Storage Length (ft)	0	0	0	0	0	0	0	0	0	180	0	0			
Storage Lanes	1		0	1		0	0		0	1		0			
Taper Length (ft)	25			25			25			50					
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00			
Ped Bike Factor	0.79	0.98		0.92	0.93			1.00		1.00					
Frt		0.983			0.969			0.979							
Flt Protected	0.950			0.950						0.950					
Satd. Flow (prot)	1624	1798	0	1577	1693	0	0	3034	0	1570	3079	0			
Flt Permitted	0.548			0.546						0.950					
Satd. Flow (perm)	745	1798	0	830	1693	0	0	3034	0	1565	3079	0			
Right Turn on Red			Yes			Yes			No			Yes			
Satd. Flow (RTOR)															
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		124			145			645			487				
Travel Time (s)		2.8			3.3			14.7			11.1				
Confl. Peds. (#/hr)	175		50	50		175			4	4					
Peak Hour Factor	0.96	0.96	0.96	0.97	0.97	0.97	0.96	0.96	0.96	0.98	0.98	0.98			
Heavy Vehicles (%)	0%	4%	6%	3%	4%	0%	0%	1%	1%	0%	2%	0%			
Adj. Flow (vph)	79	321	40	38	284	73	0	754	126	142	208	0			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	79	361	0	38	357	0	0	880	0	142	208	0			
Turn Type	Perm	NA		Perm	NA			NA		Prot	NA				
Protected Phases		1 2 5 6!			1 2 5 6!			1 2!		6!	1 6!		1	2	5
Permitted Phases	1 2 5 6!			1 2 5 6!											
Detector Phase	1 2 5 6	1 2 5 6		1 2 5 6	1 2 5 6			1 2		6	1 6				
Switch Phase															
Minimum Initial (s)										6.0			8.0	5.0	10.0
Minimum Split (s)										21.0			23.0	20.0	25.0
Total Split (s)										21.0			23.0	20.0	25.0
Total Split (%)										17.5%			19%	17%	47%
Maximum Green (s)										15.0			17.0	14.0	47.0
Yellow Time (s)										3.0			3.0	3.0	3.0
All-Red Time (s)										3.0			3.0	3.0	6.0
Lost Time Adjust (s)										-2.0					
Total Lost Time (s)										4.0					
Lead/Lag										Lag			Lead	Lag	Lead
Lead-Lag Optimize?										Yes					
Vehicle Extension (s)										2.0			2.0	4.0	2.0
Recall Mode										None			C-Max	None	None
Walk Time (s)										7.0			6.0	7.0	7.0
Flash Dont Walk (s)										7.0			7.0	7.0	9.0
Pedestrian Calls (#/hr)										0			0	0	0
Act Effct Green (s)	120.0	120.0		120.0	120.0			42.7		16.2	42.8				
Actuated g/C Ratio	1.00	1.00		1.00	1.00			0.36		0.14	0.36				
v/c Ratio	0.11	0.20		0.05	0.21			0.82		0.67	0.19				
Control Delay	0.1	0.1		0.1	0.2			43.5		65.6	28.2				
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0				
Total Delay	0.1	0.1		0.1	0.2			43.5		65.6	28.2				
LOS	A	A		A	A			D		E	C				
Approach Delay		0.1			0.2			43.5			43.4				
Approach LOS		A			A			D			D				
Queue Length 50th (ft)	0	0		0	0			340		105	60				
Queue Length 95th (ft)	m0	m0		m0	0			#457		#178	91				
Internal Link Dist (ft)		44			65			565			407				
Turn Bay Length (ft)										180					
Base Capacity (vph)	745	1798		830	1693			1078		222	1098				
Starvation Cap Reductn	0	0		0	0			0		0	0				
Spillback Cap Reductn	0	0		0	0			0		0	0				
Storage Cap Reductn	0	0		0	0			0		0	0				
Reduced v/c Ratio	0.11	0.20		0.05	0.21			0.82		0.64	0.19				

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 37 (31%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 26.0
 Intersection Capacity Utilization 77.5%
 Intersection LOS: C
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 5: Commonwealth Avenue & Washington Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø6
Lane Configurations	↔	↕			↕			↕	↕					
Traffic Volume (vph)	25	534	0	0	387	7	0	33	65	0	0	0		
Future Volume (vph)	25	534	0	0	387	7	0	33	65	0	0	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Storage Length (ft)	0		0	0		0	0		114	0		0		
Storage Lanes	1		0	0		0	0		1	0		0		
Taper Length (ft)	25			25			25			25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor	0.70				0.99				0.83					
Frt					0.998				0.850					
Flt Protected	0.950													
Satd. Flow (prot)	1624	1644	0	0	1464	0	0	1660	1283	0	0	0		
Flt Permitted	0.524													
Satd. Flow (perm)	625	1644	0	0	1464	0	0	1660	1061	0	0	0		
Right Turn on Red			Yes			Yes		Yes				Yes		
Satd. Flow (RTOR)					1				109					
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		145			359			458			887			
Travel Time (s)		3.3			8.2			10.4			20.2			
Confl. Peds. (#/hr)	175					175			36					
Confl. Bikes (#/hr)									1					
Peak Hour Factor	0.96	0.96	0.96	0.97	0.97	0.97	0.87	0.87	0.87	0.92	0.92	0.92		
Heavy Vehicles (%)	0%	4%	0%	0%	4%	0%	0%	3%	2%	2%	2%	2%		
Parking (#/hr)					0	0			0					
Adj. Flow (vph)	26	556	0	0	399	7	0	38	75	0	0	0		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	26	556	0	0	406	0	0	38	75	0	0	0		
Turn Type	Perm	NA			NA			NA	custom					
Protected Phases		1 2 5 6!			5			1 2!	2!				1	6
Permitted Phases	1 2 5 6!								1					
Detector Phase	1 2 5 6	1 2 5 6			5			1 2	2					
Switch Phase														
Minimum Initial (s)					10.0				5.0				8.0	6.0
Minimum Split (s)					25.0				20.0				23.0	21.0
Total Split (s)					56.0				20.0				23.0	21.0
Total Split (%)					46.7%				16.7%				19%	18%
Maximum Green (s)					47.0				14.0				17.0	15.0
Yellow Time (s)					3.0				3.0				3.0	3.0
All-Red Time (s)					6.0				3.0				3.0	3.0
Lost Time Adjust (s)					0.0				0.0					
Total Lost Time (s)					9.0				6.0					
Lead/Lag					Lead				Lag				Lead	Lag
Lead-Lag Optimize?														Yes
Vehicle Extension (s)					2.0				4.0				2.0	2.0
Recall Mode					None				None				C-Max	None
Walk Time (s)					7.0				7.0				6.0	7.0
Flash Dont Walk (s)					9.0				7.0				7.0	7.0
Pedestrian Calls (#/hr)					0				0				0	0
Act Effct Green (s)	120.0	120.0			44.2			40.7	34.7					
Actuated g/C Ratio	1.00	1.00			0.37			0.34	0.29					
v/c Ratio	0.04	0.34			0.75			0.07	0.18					
Control Delay	0.1	0.6			42.5			29.8	3.1					
Queue Delay	0.0	0.0			0.0			0.0	0.0					
Total Delay	0.1	0.6			42.5			29.8	3.1					
LOS	A	A			D			C	A					
Approach Delay		0.5			42.5			12.1						
Approach LOS		A			D			B						
Queue Length 50th (ft)	0	0			261			21	0					
Queue Length 95th (ft)	m0	m0			385			46	13					
Internal Link Dist (ft)		65			279			378			807			
Turn Bay Length (ft)									114					
Base Capacity (vph)	619	1630			574			562	409					
Starvation Cap Reductn	0	0			0			0	0					
Spillback Cap Reductn	0	0			0			0	0					
Storage Cap Reductn	0	0			0			0	0					
Reduced v/c Ratio	0.04	0.34			0.71			0.07	0.18					

Intersection Summary


















Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 37 (31%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 17.2
 Intersection Capacity Utilization 52.9%
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Intersection LOS: B
 ICU Level of Service A












Splits and Phases: 6: East Carriage Road & Washington Street



HCM Unsignalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Sign Control		Stop			Yield				Stop			Stop	
Traffic Volume (vph)	4	29	15	29	17	1	1	7	7	1	17	16	12
Future Volume (vph)	4	29	15	29	17	1	1	7	7	1	17	16	12
Peak Hour Factor	0.70	0.70	0.70	0.95	0.95	0.95	0.50	0.50	0.50	0.50	0.95	0.95	0.95
Hourly flow rate (vph)	6	41	21	31	18	1	0	14	14	2	18	17	13
Direction, Lane #	EB 1	WB 1	NB 1	SB 1									
Volume Total (vph)	68	50	30	48									
Volume Left (vph)	6	31	14	18									
Volume Right (vph)	21	1	2	13									
Hadj (s)	-0.17	0.15	0.16	-0.05									
Departure Headway (s)	4.0	4.3	4.4	4.1									
Degree Utilization, x	0.07	0.06	0.04	0.06									
Capacity (veh/h)	885	817	791	841									
Control Delay (s)	7.3	7.6	7.5	7.4									
Approach Delay (s)	7.3	7.6	7.5	7.4									
Approach LOS	A	A	A	A									
Intersection Summary													
Delay				7.4									
Level of Service				A									
Intersection Capacity Utilization			26.5%		ICU Level of Service				A				
Analysis Period (min)			15										

HCM Unsignalized Intersection Capacity Analysis

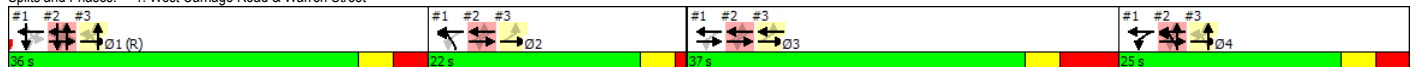
						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				 	 	
Traffic Volume (veh/h)	0	47	0	0	294	47
Future Volume (Veh/h)	0	47	0	0	294	47
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.70	0.70	0.92	0.92	0.81	0.81
Hourly flow rate (vph)	0	67	0	0	363	58
Pedestrians	3					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				487	380	
pX, platoon unblocked						
vC, conflicting volume	395	214	424			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	395	214	424			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	92	100			
cM capacity (veh/h)	586	796	1143			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	67	0	0	242	179	
Volume Left	0	0	0	0	0	
Volume Right	67	0	0	0	58	
cSH	796	1700	1700	1700	1700	
Volume to Capacity	0.08	0.00	0.00	0.14	0.11	
Queue Length 95th (ft)	7	0	0	0	0	
Control Delay (s)	9.9	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	9.9	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			20.0%	ICU Level of Service	A	
Analysis Period (min)			15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕				↕	↕
Traffic Volume (vph)	0	280	17	21	476	0	25	0	0	170	60	77
Future Volume (vph)	0	280	17	21	476	0	25	0	0	170	60	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.992									0.966	
Fit Protected				0.950			0.950				0.973	
Satd. Flow (prot)	0	1495	0	1624	1693	0	1624	0	0	0	1447	0
Fit Permitted				0.078			0.950				0.973	
Satd. Flow (perm)	0	1495	0	133	1693	0	1624	0	0	0	1447	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		3										
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		307			119			412			462	
Travel Time (s)		7.0			2.7			9.4			10.5	
Confl. Peds. (#/hr)			67	67								
Peak Hour Factor	0.96	0.96	0.96	0.97	0.97	0.97	0.79	0.79	0.79	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		0	0							0	0	0
Adj. Flow (vph)	0	292	18	22	491	0	32	0	0	177	63	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	310	0	22	491	0	32	0	0	0	320	0
Turn Type		NA		custom	NA		Prot			Perm	NA	
Protected Phases		3		4	1 2 3 4!		2!				1!	
Permitted Phases				1 2 3!	1 2!					1!		
Detector Phase		3		4	1 2 3 4		2			1	1	
Switch Phase												
Minimum Initial (s)		8.0		8.0			8.0			8.0	8.0	
Minimum Split (s)		30.0		14.0			12.0			14.0	14.0	
Total Split (s)		37.0		25.0			22.0			36.0	36.0	
Total Split (%)		30.8%		20.8%			18.3%			30.0%	30.0%	
Maximum Green (s)		29.0		19.0			18.0			30.0	30.0	
Yellow Time (s)		3.0		3.0			3.0			3.0	3.0	
All-Red Time (s)		5.0		3.0			1.0			3.0	3.0	
Lost Time Adjust (s)		-4.0		-2.0			0.0			-2.0	-2.0	
Total Lost Time (s)		4.0		4.0			4.0			4.0	4.0	
Lead/Lag		Lead		Lag			Lag			Lead	Lead	
Lead-Lag Optimize?				Yes			Yes					
Vehicle Extension (s)		1.0		1.0			1.0			1.0	1.0	
Recall Mode		None		None			Min			C-Max	C-Max	
Walk Time (s)		8.0										
Flash Dont Walk (s)		14.0										
Pedestrian Calls (#/hr)		104										
Act Effct Green (s)		30.9		112.0	120.0		8.5				47.4	
Actuated g/C Ratio		0.26		0.93	1.00		0.07				0.40	
v/c Ratio		0.80		0.07	0.29		0.28				0.56	
Control Delay		57.5		0.8	0.4		58.8				34.7	
Queue Delay		0.0		0.9	0.0		0.0				0.0	
Total Delay		57.5		1.6	0.4		58.8				34.7	
LOS		E		A	A		E				C	
Approach Delay		57.5			0.5			58.8			34.7	
Approach LOS		E			A			E			C	
Queue Length 50th (ft)		218		0	0		24				196	
Queue Length 95th (ft)		#346		m2	0		49				320	
Internal Link Dist (ft)		227			39			332			382	
Turn Bay Length (ft)												
Base Capacity (vph)		413		387	1683		243				571	
Starvation Cap Reductn		0		263	0		0				0	
Spillback Cap Reductn		0		0	0		0				0	
Storage Cap Reductn		0		0	0		0				0	
Reduced v/c Ratio		0.75		0.18	0.29		0.13				0.56	

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 70 (58%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 26.5
 Intersection LOS: C
 Intersection Capacity Utilization 51.7%
 ICU Level of Service A
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 1: West Carriage Road & Warren Street

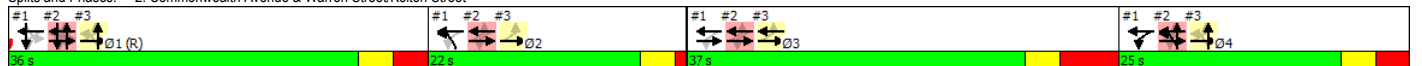


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2	Ø3
Lane Configurations	↖	↗		↖	↗			↕			↕			
Traffic Volume (vph)	57	164	229	11	226	8	170	376	25	9	372	101		
Future Volume (vph)	57	164	229	11	226	8	170	376	25	9	372	101		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	11	12	12	11	12	12	12	12	12	12	12		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95		
Ped Bike Factor	0.99	0.99		0.99	1.00									
Frt		0.913			0.995			0.993			0.969			
Fit Protected	0.950			0.950				0.985			0.999			
Satd. Flow (prot)	1593	1482	0	1624	1644	0	0	3148	0	0	3121	0		
Fit Permitted	0.609			0.522				0.635			0.942			
Satd. Flow (perm)	1014	1482	0	887	1644	0	0	2029	0	0	2943	0		
Right Turn on Red			No			No			Yes			No		
Satd. Flow (RTOR)								5						
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		119			126			1051			519			
Travel Time (s)		2.7			2.9			23.9			11.8			
Confl. Peds. (#/hr)	30		37	37		30								
Peak Hour Factor	0.96	0.96	0.96	0.97	0.97	0.97	0.96	0.96	0.96	0.98	0.98	0.98		
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	1%	1%	0%	0%	1%	0%		
Adj. Flow (vph)	59	171	239	11	233	8	177	392	26	9	380	103		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	59	410	0	11	241	0	0	595	0	0	492	0		
Turn Type	Perm	NA		Perm	NA		D,P+P	NA		Perm	NA			
Protected Phases		1 2 3 4!			1 2 3 4!		4!	1 4!			1!		2	3
Permitted Phases	1 2 3 4!			1 2 3 4!			1!			1!				
Detector Phase	1 2 3 4	1 2 3 4		1 2 3 4	1 2 3 4		4	1 4		1	1			
Switch Phase														
Minimum Initial (s)							8.0			8.0	8.0		8.0	8.0
Minimum Split (s)							14.0			14.0	14.0		12.0	30.0
Total Split (s)							25.0			36.0	36.0		22.0	37.0
Total Split (%)							20.8%			30.0%	30.0%		18%	31%
Maximum Green (s)							19.0			30.0	30.0		18.0	29.0
Yellow Time (s)							3.0			3.0	3.0		3.0	3.0
All-Red Time (s)							3.0			3.0	3.0		1.0	5.0
Lost Time Adjust (s)													-2.0	
Total Lost Time (s)													4.0	
Lead/Lag							Lag		Lead	Lead		Lag	Lead	
Lead-Lag Optimize?							Yes					Yes		
Vehicle Extension (s)							1.0			1.0	1.0		1.0	1.0
Recall Mode							None			C-Max	C-Max		Min	None
Walk Time (s)														8.0
Flash Dont Walk (s)														14.0
Pedestrian Calls (#/hr)														104
Act Effct Green (s)	120.0	120.0		120.0	120.0			64.6			47.4			
Actuated g/C Ratio	1.00	1.00		1.00	1.00			0.54			0.40			
v/c Ratio	0.06	0.28		0.01	0.15			0.47			0.42			
Control Delay	0.1	0.3		0.0	0.1			15.4			29.1			
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0			
Total Delay	0.1	0.3		0.0	0.1			15.4			29.1			
LOS	A	A		A	A			B			C			
Approach Delay		0.3			0.1			15.4			29.1			
Approach LOS		A			A			B			C			
Queue Length 50th (ft)	0	0		0	0			124			148			
Queue Length 95th (ft)	m0	0		m0	0			172			215			
Internal Link Dist (ft)		39			46			971			439			
Turn Bay Length (ft)														
Base Capacity (vph)	1008	1473		881	1634			1333			1162			
Starvation Cap Reductn	0	0		0	0			0			0			
Spillback Cap Reductn	0	0		0	0			0			0			
Storage Cap Reductn	0	0		0	0			0			0			
Reduced v/c Ratio	0.06	0.28		0.01	0.15			0.45			0.42			

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 70 (58%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 13.1
 Intersection LOS: B
 Intersection Capacity Utilization 80.3%
 ICU Level of Service D
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 2: Commonwealth Avenue & Warren Street/Kelton Street

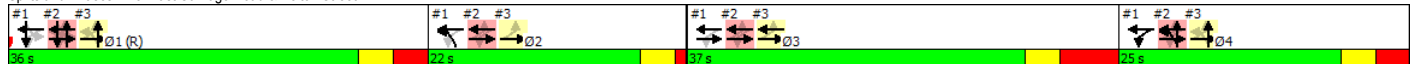


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø4
Lane Configurations	↔	↕			↕			↕							
Traffic Volume (vph)	20	178	0	0	244	10	1	8	7	0	0	0			
Future Volume (vph)	20	178	0	0	244	10	1	8	7	0	0	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane 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				1.00										
Frt					0.995			0.941							
Fit Protected	0.950							0.998							
Satd. Flow (prot)	1593	1693	0	0	1525	0	0	1445	0	0	0	0			
Fit Permitted	0.540							0.998							
Satd. Flow (perm)	866	1693	0	0	1525	0	0	1445	0	0	0	0			
Right Turn on Red			Yes			Yes			Yes			Yes			
Satd. Flow (RTOR)					2			10							
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		126			367			366			364				
Travel Time (s)		2.9			8.3			8.3			8.3				
Confl. Peds. (#/hr)	30					30									
Peak Hour Factor	0.96	0.96	0.96	0.98	0.98	0.98	0.68	0.68	0.68	0.92	0.92	0.92			
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%			
Parking (#/hr)					0	0	0	0	0						
Adj. Flow (vph)	21	185	0	0	249	10	1	12	10	0	0	0			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	21	185	0	0	259	0	0	23	0	0	0	0			
Turn Type	Perm	NA			NA		Perm	NA							
Protected Phases		1 2 3 4!			3			1 4!					1	2	4
Permitted Phases	1 2 3 4!						1 4!								
Detector Phase	1 2 3 4	1 2 3 4			3		1 4	1 4							
Switch Phase															
Minimum Initial (s)					8.0								8.0	8.0	8.0
Minimum Split (s)					30.0								14.0	12.0	14.0
Total Split (s)					37.0								36.0	22.0	25.0
Total Split (%)					30.8%								30%	18%	21%
Maximum Green (s)					29.0								30.0	18.0	19.0
Yellow Time (s)					3.0								3.0	3.0	3.0
All-Red Time (s)					5.0								3.0	1.0	3.0
Lost Time Adjust (s)					-4.0										
Total Lost Time (s)					4.0										
Lead/Lag					Lead								Lead	Lag	Lag
Lead-Lag Optimize?														Yes	Yes
Vehicle Extension (s)					1.0								1.0	1.0	1.0
Recall Mode					None								C-Max	Min	None
Walk Time (s)					8.0										
Flash Dont Walk (s)					14.0										
Pedestrian Calls (#/hr)					104										
Act Effct Green (s)	120.0	120.0			30.9			68.6							
Actuated g/C Ratio	1.00	1.00			0.26			0.57							
v/c Ratio	0.02	0.11			0.66			0.03							
Control Delay	0.1	0.1			48.0			8.8							
Queue Delay	0.0	0.0			0.0			0.0							
Total Delay	0.1	0.1			48.0			8.8							
LOS	A	A			D			A							
Approach Delay		0.1			48.0			8.8							
Approach LOS		A			D			A							
Queue Length 50th (ft)	0	0			174			4							
Queue Length 95th (ft)	m0	0			267			12							
Internal Link Dist (ft)		46			287			286			284				
Turn Bay Length (ft)															
Base Capacity (vph)	860	1683			420			822							
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	0.02	0.11			0.62			0.03							

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 70 (58%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 26.0
 Intersection Capacity Utilization 31.8%
 Intersection LOS: C
 ICU Level of Service A
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 3: East Carriage Road & Kelton Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø6
Lane Configurations		↔			↔						↑				
Traffic Volume (vph)	4	410	12	12	283	12	0	0	0	0	31	42			
Future Volume (vph)	4	410	12	12	283	12	0	0	0	0	31	42			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
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			0.98						0.90				
Frt		0.996			0.995						0.922				
Fit Protected					0.998										
Satd. Flow (prot)	0	1479	0	0	1625	0	0	0	0	0	1276	0			
Fit Permitted		0.979			0.981										
Satd. Flow (perm)	0	1448	0	0	1589	0	0	0	0	0	1276	0			
Right Turn on Red			Yes			Yes			Yes			No			
Satd. Flow (RTOR)		1													
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		1136			151			491			526				
Travel Time (s)		25.8			3.4			11.2			12.0				
Confl. Peds. (#/hr)	126		67	67		126						50			
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.92			
Heavy Vehicles (%)	0%	3%	0%	0%	3%	0%	2%	2%	2%	0%	0%	0%			
Parking (#/hr)	0	0	0							0	0	0			
Adj. Flow (vph)	4	446	13	13	295	13	0	0	0	0	34	46			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	463	0	0	321	0	0	0	0	0	80	0			
Turn Type	Perm	NA		Perm	NA						NA				
Protected Phases		5			1 2 5 6!						16!		1	2	6
Permitted Phases	5			1 2 5 6!											
Detector Phase	5	5		1 2 5 6	1 2 5 6						16				
Switch Phase															
Minimum Initial (s)	10.0	10.0											8.0	5.0	6.0
Minimum Split (s)	25.0	25.0											25.0	20.0	21.0
Total Split (s)	54.0	54.0											25.0	20.0	21.0
Total Split (%)	45.0%	45.0%											21%	17%	18%
Maximum Green (s)	45.0	45.0											19.0	14.0	15.0
Yellow Time (s)	3.0	3.0											3.0	3.0	3.0
All-Red Time (s)	6.0	6.0											3.0	3.0	3.0
Lost Time Adjust (s)															
Total Lost Time (s)															
Lead/Lag	Lead	Lead											Lead	Lag	Lag
Lead-Lag Optimize?															Yes
Vehicle Extension (s)	2.0	2.0											2.0	4.0	2.0
Recall Mode	None	None											C-Max	None	None
Walk Time (s)	7.0	7.0											7.0	7.0	7.0
Flash Dont Walk (s)	9.0	9.0											12.0	7.0	7.0
Pedestrian Calls (#/hr)	0	0											0	0	0
Act Effct Green (s)		47.4			120.0						44.9				
Actuated g/C Ratio		0.40			1.00						0.37				
v/c Ratio		0.81			0.20						0.17				
Control Delay		44.3			0.3						27.8				
Queue Delay		0.0			0.0						0.0				
Total Delay		44.3			0.3						27.8				
LOS		D			A						C				
Approach Delay		44.3			0.3						27.8				
Approach LOS		D			A						C				
Queue Length 50th (ft)		302			0						43				
Queue Length 95th (ft)		443			0						82				
Internal Link Dist (ft)		1056			71			411			446				
Turn Bay Length (ft)															
Base Capacity (vph)		603			1577						477				
Starvation Cap Reductn		0			0						0				
Spillback Cap Reductn		0			0						0				
Storage Cap Reductn		0			0						0				
Reduced v/c Ratio		0.77			0.20						0.17				

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 23 (19%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 26.4
 Intersection LOS: C
 Intersection Capacity Utilization 49.1%
 ICU Level of Service A
 Analysis Period (min) 15
 ! Phase conflict between lane groups.

Splits and Phases: 4: West Carriage Road & Washington Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø5
Lane Configurations	↖	↗		↖	↗			↖	↗		↖	↗			
Traffic Volume (vph)	60	299	25	46	288	35	0	348	107	170	417	0			
Future Volume (vph)	60	299	25	46	288	35	0	348	107	170	417	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width (ft)	12	16	12	12	16	12	12	11	12	11	11	12			
Storage Length (ft)	0		0	0		0	0		0	180		0			
Storage Lanes	1		0	1		0	0		0	1		0			
Taper Length (ft)	25			25			25			25					
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00			
Ped Bike Factor	0.85	0.99		0.92	0.97			1.00							
Frt		0.988			0.984			0.965							
Flt Protected	0.950			0.950						0.950					
Satd. Flow (prot)	1624	1834	0	1624	1823	0	0	2971	0	1570	3110	0			
Flt Permitted	0.556			0.550						0.950					
Satd. Flow (perm)	809	1834	0	867	1823	0	0	2971	0	1570	3110	0			
Right Turn on Red			Yes			Yes			No			Yes			
Satd. Flow (RTOR)															
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		151			146			543			536				
Travel Time (s)		3.4			3.3			12.3			12.2				
Confl. Peds. (#/hr)	126		67	67		126									
Confl. Bikes (#/hr)								1							
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.98	0.98	0.98	0.94	0.94	0.94			
Heavy Vehicles (%)	0%	3%	7%	0%	2%	0%	0%	1%	4%	0%	1%	0%			
Adj. Flow (vph)	65	325	27	48	303	37	0	355	109	181	444	0			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	65	352	0	48	340	0	0	464	0	181	444	0			
Turn Type	Perm	NA		Perm	NA			NA		Prot	NA				
Protected Phases		1 2 5 6!			1 2 5 6!			1 2!		6!	1 6!		1	2	5
Permitted Phases	1 2 5 6!			1 2 5 6!											
Detector Phase	1 2 5 6	1 2 5 6		1 2 5 6	1 2 5 6			1 2		6	1 6				
Switch Phase															
Minimum Initial (s)										6.0			8.0	5.0	10.0
Minimum Split (s)										21.0			25.0	20.0	25.0
Total Split (s)										21.0			25.0	20.0	54.0
Total Split (%)										17.5%			21%	17%	45%
Maximum Green (s)										15.0			19.0	14.0	45.0
Yellow Time (s)										3.0			3.0	3.0	3.0
All-Red Time (s)										3.0			3.0	3.0	6.0
Lost Time Adjust (s)										-2.0					
Total Lost Time (s)										4.0					
Lead/Lag										Lag			Lead	Lag	Lead
Lead-Lag Optimize?										Yes					
Vehicle Extension (s)										2.0			2.0	4.0	2.0
Recall Mode										None			C-Max	None	None
Walk Time (s)										7.0			7.0	7.0	7.0
Flash Dont Walk (s)										7.0			12.0	7.0	9.0
Pedestrian Calls (#/hr)										0			0	0	0
Act Effct Green (s)	120.0	120.0		120.0	120.0			43.6		17.0	44.9				
Actuated g/C Ratio	1.00	1.00		1.00	1.00			0.36		0.14	0.37				
v/c Ratio	0.08	0.19		0.06	0.19			0.43		0.82	0.38				
Control Delay	0.1	0.1		0.1	0.2			31.1		77.7	29.5				
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0				
Total Delay	0.1	0.1		0.1	0.2			31.1		77.7	29.5				
LOS	A	A		A	A			C		E	C				
Approach Delay		0.1			0.2			31.1			43.4				
Approach LOS		A			A			C			D				
Queue Length 50th (ft)	0	0		0	0			146		138	136				
Queue Length 95th (ft)	m0	m0		m0	0			197		#259	184				
Internal Link Dist (ft)		71			66			463			456				
Turn Bay Length (ft)										180					
Base Capacity (vph)	803	1820		860	1809			1086		222	1163				
Starvation Cap Reductn	0	0		0	0			0		0	0				
Spillback Cap Reductn	0	0		0	0			0		0	0				
Storage Cap Reductn	0	0		0	0			0		0	0				
Reduced v/c Ratio	0.08	0.19		0.06	0.19			0.43		0.82	0.38				

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 23 (19%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 22.0
 Intersection LOS: C
 Intersection Capacity Utilization 64.9%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 5: Commonwealth Avenue/Commonwealth Ave & Washington Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø6
Lane Configurations	↖	↗			↖			↗	↖	↗				
Traffic Volume (vph)	19	560	0	0	392	13	0	24	42	0	0	0		
Future Volume (vph)	19	560	0	0	392	13	0	24	42	0	0	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Storage Length (ft)	0		0	0		0	0		114	0		0		
Storage Lanes	1		0	0		0	0		1	0		0		
Taper Length (ft)	25			25			25			25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor	0.74				0.98				0.82					
Fr					0.996				0.850					
Flt Protected	0.950													
Satd. Flow (prot)	1624	1676	0	0	1480	0	0	1710	1308	0	0	0		
Flt Permitted	0.514													
Satd. Flow (perm)	649	1676	0	0	1480	0	0	1710	1066	0	0	0		
Right Turn on Red			Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)				2					109					
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		146			345			669			869			
Travel Time (s)		3.3			7.8			15.2			19.8			
Confl. Peds. (#/hr)	126					126			39					
Confl. Bikes (#/hr)									1					
Peak Hour Factor	0.96	0.96	0.96	0.95	0.95	0.95	0.71	0.71	0.71	0.92	0.92	0.92		
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	2%	2%	2%		
Parking (#/hr)					0	0			0					
Adj. Flow (vph)	20	583	0	0	413	14	0	34	59	0	0	0		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	20	583	0	0	427	0	0	34	59	0	0	0		
Turn Type	Perm	NA			NA			NA	custom					
Protected Phases		1 2 5 6!			5			1 2!	2!				1	6
Permitted Phases	1 2 5 6!								1					
Detector Phase	1 2 5 6	1 2 5 6			5			1 2	2					
Switch Phase														
Minimum Initial (s)					10.0				5.0				8.0	6.0
Minimum Split (s)					25.0				20.0				25.0	21.0
Total Split (s)					54.0				20.0				25.0	21.0
Total Split (%)					45.0%				16.7%				21%	18%
Maximum Green (s)					45.0				14.0				19.0	15.0
Yellow Time (s)					3.0				3.0				3.0	3.0
All-Red Time (s)					6.0				3.0				3.0	3.0
Lost Time Adjust (s)					-5.0				-2.0					
Total Lost Time (s)					4.0				4.0					
Lead/Lag					Lead				Lag				Lead	Lag
Lead-Lag Optimize?														Yes
Vehicle Extension (s)					2.0				4.0				2.0	2.0
Recall Mode					None				None				C-Max	None
Walk Time (s)					7.0				7.0				7.0	7.0
Flash Dont Walk (s)					9.0				7.0				12.0	7.0
Pedestrian Calls (#/hr)					0				0				0	0
Act Effct Green (s)	120.0	120.0			47.4			43.6	39.6					
Actuated g/C Ratio	1.00	1.00			0.40			0.36	0.33					
v/c Ratio	0.03	0.35			0.73			0.05	0.13					
Control Delay	0.1	0.6			38.7			26.9	1.0					
Queue Delay	0.0	0.0			0.0			0.0	0.0					
Total Delay	0.1	0.6			38.7			26.9	1.0					
LOS	A	A			D			C	A					
Approach Delay		0.6			38.7			10.4						
Approach LOS		A			D			B						
Queue Length 50th (ft)	0	0			265			18	0					
Queue Length 95th (ft)	0	m0			390			33	0					
Internal Link Dist (ft)		66			265			589			789			
Turn Bay Length (ft)									114					
Base Capacity (vph)	644	1663			617			625	459					
Starvation Cap Reductn	0	0			0			0	0					
Spillback Cap Reductn	0	0			0			0	0					
Storage Cap Reductn	0	0			0			0	0					
Reduced v/c Ratio	0.03	0.35			0.69			0.05	0.13					


















Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 23 (19%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 15.9
 Intersection LOS: B
 Intersection Capacity Utilization 55.2%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 6: East Carriage Road & Washington Street



HCM Unsignalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Sign Control		Stop			Yield				Stop			Stop	
Traffic Volume (vph)	9	23	20	45	27	10	2	5	7	4	31	26	9
Future Volume (vph)	9	23	20	45	27	10	2	5	7	4	31	26	9
Peak Hour Factor	0.75	0.75	0.75	0.96	0.96	0.96	0.90	0.90	0.90	0.90	0.97	0.97	0.97
Hourly flow rate (vph)	12	31	27	47	28	10	0	6	8	4	32	27	9
Direction, Lane #	EB 1	WB 1	NB 1	SB 1									
Volume Total (vph)	70	85	18	68									
Volume Left (vph)	12	47	6	32									
Volume Right (vph)	27	10	4	9									
Hadj (s)	-0.20	0.04	-0.07	0.01									
Departure Headway (s)	4.0	4.2	4.2	4.3									
Degree Utilization, x	0.08	0.10	0.02	0.08									
Capacity (veh/h)	877	834	806	812									
Control Delay (s)	7.3	7.7	7.3	7.6									
Approach Delay (s)	7.3	7.7	7.3	7.6									
Approach LOS	A	A	A	A									
Intersection Summary													
Delay				7.5									
Level of Service				A									
Intersection Capacity Utilization			29.1%		ICU Level of Service				A				
Analysis Period (min)			15										

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑		↑↑	↑↑	
Traffic Volume (veh/h)	0	58	0	0	523	82
Future Volume (Veh/h)	0	58	0	0	523	82
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.92	0.92	0.96	0.96
Hourly flow rate (vph)	0	77	0	0	545	85
Pedestrians	2					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)				536		
pX, platoon unblocked						
vC, conflicting volume	590	317	632			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	590	317	632			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	89	100			
cM capacity (veh/h)	443	684	959			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	77	0	0	363	267	
Volume Left	0	0	0	0	0	
Volume Right	77	0	0	0	85	
cSH	684	1700	1700	1700	1700	
Volume to Capacity	0.11	0.00	0.00	0.21	0.16	
Queue Length 95th (ft)	9	0	0	0	0	
Control Delay (s)	10.9	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	10.9	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization		27.4%		ICU Level of Service	A	
Analysis Period (min)		15				

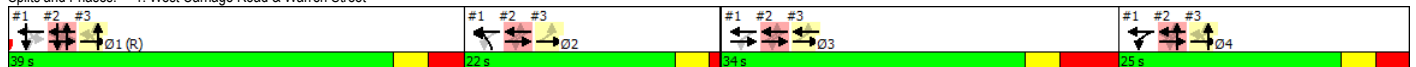
- Build (2026) Condition

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕				↕	
Traffic Volume (vph)	0	224	14	12	613	0	52	0	0	113	18	69
Future Volume (vph)	0	224	14	12	613	0	52	0	0	113	18	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.992									0.954	
Fit Protected				0.950			0.950				0.973	
Satd. Flow (prot)	0	1458	0	1425	1710	0	1562	0	0	0	1410	0
Fit Permitted				0.093			0.950				0.973	
Satd. Flow (perm)	0	1458	0	140	1710	0	1562	0	0	0	1410	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		2										
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		329			104			401			442	
Travel Time (s)		7.5			2.4			9.1			10.0	
Confl. Peds. (#/hr)			96	96								
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.81	0.81	0.81	0.92	0.92	0.92
Heavy Vehicles (%)	0%	3%	3%	14%	0%	0%	4%	0%	0%	0%	7%	2%
Parking (#/hr)		0	0							0	0	0
Adj. Flow (vph)	0	238	15	13	659	0	64	0	0	123	20	75
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	253	0	13	659	0	64	0	0	0	218	0
Turn Type		NA		custom	NA		Prot			Perm	NA	
Protected Phases		3		4	1 2 3 4!		2!				1!	
Permitted Phases				1 2 3!	1 2!					1!		
Detector Phase		3		4	1 2 3 4		2			1	1	
Switch Phase												
Minimum Initial (s)		8.0		8.0			8.0			8.0	8.0	
Minimum Split (s)		30.0		14.0			12.0			14.0	14.0	
Total Split (s)		34.0		25.0			22.0			39.0	39.0	
Total Split (%)		28.3%		20.8%			18.3%			32.5%	32.5%	
Maximum Green (s)		26.0		19.0			18.0			33.0	33.0	
Yellow Time (s)		3.0		3.0			3.0			3.0	3.0	
All-Red Time (s)		5.0		3.0			1.0			3.0	3.0	
Lost Time Adjust (s)		0.0		0.0			0.0			0.0	0.0	
Total Lost Time (s)		8.0		6.0			4.0			6.0	6.0	
Lead/Lag		Lead		Lag			Lag			Lead	Lead	
Lead-Lag Optimize?				Yes			Yes					
Vehicle Extension (s)		1.0		1.0			1.0			1.0	1.0	
Recall Mode		None		None			Min			C-Max	C-Max	
Walk Time (s)		8.0										
Flash Dont Walk (s)		14.0										
Pedestrian Calls (#/hr)		162										
Act Effct Green (s)		24.4		108.0	120.0		10.4				42.2	
Actuated g/C Ratio		0.20		0.90	1.00		0.09				0.35	
v/c Ratio		0.85		0.04	0.39		0.47				0.44	
Control Delay		71.0		0.6	0.6		63.2				34.6	
Queue Delay		0.0		0.0	0.0		0.0				0.0	
Total Delay		71.0		0.6	0.6		63.2				34.6	
LOS		E		A	A		E				C	
Approach Delay		71.0			0.6			63.2			34.6	
Approach LOS		E			A			E			C	
Queue Length 50th (ft)		186		0	0		49				130	
Queue Length 95th (ft)		#318		m0	0		82				219	
Internal Link Dist (ft)		249			24			321			362	
Turn Bay Length (ft)												
Base Capacity (vph)		317		329	1691		234				496	
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		0.80		0.04	0.39		0.27				0.44	

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 46 (38%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 24.8
 Intersection LOS: C
 Intersection Capacity Utilization 57.2%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 1: West Carriage Road & Warren Street

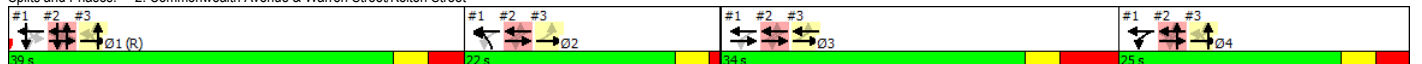


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2	Ø3	Ø4
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔			
Traffic Volume (vph)	49	145	143	20	177	10	380	630	16	3	179	73			
Future Volume (vph)	49	145	143	20	177	10	380	630	16	3	179	73			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width (ft)	12	11	12	12	11	12	12	12	12	12	12	12			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95			
Ped Bike Factor	0.99	0.98		0.99	1.00										
Frt		0.925			0.992			0.998			0.957				
Fit Protected	0.950			0.950				0.982			0.999				
Satd. Flow (prot)	1593	1482	0	1533	1637	0	0	3149	0	0	3025	0			
Fit Permitted	0.632			0.574				0.728			0.813				
Satd. Flow (perm)	1048	1482	0	913	1637	0	0	2334	0	0	2462	0			
Right Turn on Red			No			No			Yes			No			
Satd. Flow (RTOR)								2							
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		104			131			1035			514				
Travel Time (s)		2.4			3.0			23.5			11.7				
Confl. Peds. (#/hr)	46		66	66		46									
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.99	0.99	0.99	0.96	0.96	0.96			
Heavy Vehicles (%)	2%	3%	0%	6%	0%	0%	1%	1%	9%	0%	3%	2%			
Adj. Flow (vph)	52	154	152	22	190	11	384	636	16	3	186	76			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	52	306	0	22	201	0	0	1036	0	0	265	0			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA				
Protected Phases		1 2 3 4!			1 2 3 4!			1 4!			1!		2	3	4
Permitted Phases	1 2 3 4!			1 2 3 4!			1 4!			1!					
Detector Phase	1 2 3 4	1 2 3 4		1 2 3 4	1 2 3 4		1 4	1 4		1	1				
Switch Phase															
Minimum Initial (s)									8.0	8.0			8.0	8.0	8.0
Minimum Split (s)									14.0	14.0			12.0	30.0	14.0
Total Split (s)									39.0	39.0			22.0	34.0	25.0
Total Split (%)									32.5%	32.5%			18%	28%	21%
Maximum Green (s)									33.0	33.0			18.0	26.0	19.0
Yellow Time (s)									3.0	3.0			3.0	3.0	3.0
All-Red Time (s)									3.0	3.0			1.0	5.0	3.0
Lost Time Adjust (s)															-2.0
Total Lost Time (s)															4.0
Lead/Lag									Lead	Lead			Lag	Lead	Lag
Lead-Lag Optimize?													Yes		Yes
Vehicle Extension (s)									1.0	1.0			1.0	1.0	1.0
Recall Mode									C-Max	C-Max			Min	None	None
Walk Time (s)															8.0
Flash Dont Walk (s)															14.0
Pedestrian Calls (#/hr)															162
Act Effct Green (s)	120.0	120.0		120.0	120.0			69.2			44.2				
Actuated g/C Ratio	1.00	1.00		1.00	1.00			0.58			0.37				
v/c Ratio	0.05	0.21		0.02	0.12			0.77			0.29				
Control Delay	0.1	0.2		0.1	0.1			25.1			29.0				
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0				
Total Delay	0.1	0.2		0.1	0.1			25.1			29.0				
LOS	A	A		A	A			C			C				
Approach Delay		0.2			0.1			25.1			29.0				
Approach LOS		A			A			C			C				
Queue Length 50th (ft)	0	0		0	0			307			76				
Queue Length 95th (ft)	m0	m0		m0	m0			449			120				
Internal Link Dist (ft)		24			51			955			434				
Turn Bay Length (ft)															
Base Capacity (vph)	1048	1482		913	1637			1347			907				
Starvation Cap Reductn	0	0		0	0			0			0				
Spillback Cap Reductn	0	0		0	0			0			0				
Storage Cap Reductn	0	0		0	0			0			0				
Reduced v/c Ratio	0.05	0.21		0.02	0.12			0.77			0.29				

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 46 (38%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 18.0
 Intersection LOS: B
 Intersection Capacity Utilization 80.9%
 ICU Level of Service D
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 2: Commonwealth Avenue & Warren Street/Kelton Street



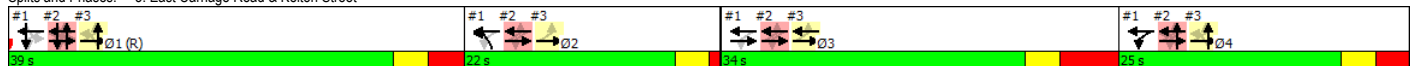
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø4
Lane Configurations	↖	↗			↖			↖							
Traffic Volume (vph)	12	151	0	0	205	10	2	15	7	0	0	0			
Future Volume (vph)	12	151	0	0	205	10	2	15	7	0	0	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane 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	0.92				0.99										
Frt					0.993			0.960							
Fit Protected	0.950							0.996							
Satd. Flow (prot)	1624	1676	0	0	1518	0	0	1472	0	0	0	0			
Fit Permitted	0.584							0.996							
Satd. Flow (perm)	919	1676	0	0	1518	0	0	1472	0	0	0	0			
Right Turn on Red			Yes			Yes			Yes			Yes			
Satd. Flow (RTOR)					2			8							
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		131			358			349			367				
Travel Time (s)		3.0			8.1			7.9			8.3				
Confl. Peds. (#/hr)	46					46									
Peak Hour Factor	0.97	0.97	0.97	0.95	0.95	0.95	0.86	0.86	0.86	0.92	0.92	0.92			
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%			
Parking (#/hr)					0	0	0	0	0						
Adj. Flow (vph)	12	156	0	0	216	11	2	17	8	0	0	0			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	12	156	0	0	227	0	0	27	0	0	0	0			
Turn Type	Perm	NA			NA		Perm	NA							
Protected Phases		1 2 3 4!			3			1 4!					1	2	4
Permitted Phases	1 2 3 4!						1 4!								
Detector Phase	1 2 3 4	1 2 3 4			3		1 4	1 4							
Switch Phase															
Minimum Initial (s)					8.0								8.0	8.0	8.0
Minimum Split (s)					30.0								14.0	12.0	14.0
Total Split (s)					34.0								39.0	22.0	25.0
Total Split (%)					28.3%								33%	18%	21%
Maximum Green (s)					26.0								33.0	18.0	19.0
Yellow Time (s)					3.0								3.0	3.0	3.0
All-Red Time (s)					5.0								3.0	1.0	3.0
Lost Time Adjust (s)					0.0										
Total Lost Time (s)					8.0										
Lead/Lag					Lead								Lead	Lag	Lag
Lead-Lag Optimize?														Yes	Yes
Vehicle Extension (s)					1.0								1.0	1.0	1.0
Recall Mode					None								C-Max	Min	None
Walk Time (s)					8.0										
Flash Dont Walk (s)					14.0										
Pedestrian Calls (#/hr)					162										
Act Effct Green (s)	120.0	120.0			24.4			67.2							
Actuated g/C Ratio	1.00	1.00			0.20			0.56							
v/c Ratio	0.01	0.09			0.73			0.03							
Control Delay	0.0	0.1			58.9			10.7							
Queue Delay	0.0	0.0			0.0			0.0							
Total Delay	0.0	0.1			58.9			10.7							
LOS	A	A			E			B							
Approach Delay		0.1			58.9			10.7							
Approach LOS		A			E			B							
Queue Length 50th (ft)	0	0			162			6							
Queue Length 95th (ft)	0	m0			253			21							
Internal Link Dist (ft)		51			278			269			287				
Turn Bay Length (ft)															
Base Capacity (vph)	908	1657			330			828							
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	0.01	0.09			0.69			0.03							

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 46 (38%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 32.4
 Intersection Capacity Utilization 35.5%
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Intersection LOS: C
 ICU Level of Service A

Splits and Phases: 3: East Carriage Road & Kelton Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø6
Lane Configurations		↕			↕						↕				
Traffic Volume (vph)	3	422	17	7	267	10	0	0	0	0	17	32			
Future Volume (vph)	3	422	17	7	267	10	0	0	0	0	17	32			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
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			0.98						0.68				
Frt		0.995			0.995						0.911				
Fit Protected					0.999										
Satd. Flow (prot)	0	1450	0	0	1605	0	0	0	0	0	906	0			
Fit Permitted		0.984			0.990										
Satd. Flow (perm)	0	1427	0	0	1586	0	0	0	0	0	906	0			
Right Turn on Red			Yes			Yes			Yes			No			
Satd. Flow (RTOR)		2													
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		289			124			357			471				
Travel Time (s)		6.6			2.8			8.1			10.7				
Confl. Peds. (#/hr)	175		50	50		175						104			
Peak Hour Factor	0.95	0.95	0.95	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92			
Heavy Vehicles (%)	0%	5%	0%	0%	4%	0%	2%	2%	2%	0%	6%	4%			
Parking (#/hr)	0	0	0							0	0	0			
Adj. Flow (vph)	3	444	18	8	287	11	0	0	0	0	18	35			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	465	0	0	306	0	0	0	0	0	53	0			
Turn Type	Perm	NA		Perm	NA						NA				
Protected Phases		5			1 2 5 6!						16!		1	2	6
Permitted Phases	5			1 2 5 6!											
Detector Phase	5	5		1 2 5 6	1 2 5 6						16				
Switch Phase															
Minimum Initial (s)	10.0	10.0											8.0	5.0	6.0
Minimum Split (s)	25.0	25.0											23.0	20.0	21.0
Total Split (s)	56.0	56.0											23.0	20.0	21.0
Total Split (%)	46.7%	46.7%											19%	17%	18%
Maximum Green (s)	47.0	47.0											17.0	14.0	15.0
Yellow Time (s)	3.0	3.0											3.0	3.0	3.0
All-Red Time (s)	6.0	6.0											3.0	3.0	3.0
Lost Time Adjust (s)															
Total Lost Time (s)															
Lead/Lag	Lead	Lead											Lead	Lag	Lag
Lead-Lag Optimize?															Yes
Vehicle Extension (s)	2.0	2.0											2.0	4.0	2.0
Recall Mode	None	None											C-Max	None	None
Walk Time (s)	7.0	7.0											6.0	7.0	7.0
Flash Dont Walk (s)	9.0	9.0											7.0	7.0	7.0
Pedestrian Calls (#/hr)	0	0											0	0	0
Act Effct Green (s)		44.2			120.0						40.8				
Actuated g/C Ratio		0.37			1.00						0.34				
v/c Ratio		0.88			0.19						0.17				
Control Delay		54.5			0.3						31.5				
Queue Delay		0.0			0.0						0.0				
Total Delay		54.5			0.3						31.5				
LOS		D			A						C				
Approach Delay		54.5			0.3						31.5				
Approach LOS		D			A						C				
Queue Length 50th (ft)		320			0						30				
Queue Length 95th (ft)		#504			0						64				
Internal Link Dist (ft)		209			44			277			391				
Turn Bay Length (ft)															
Base Capacity (vph)		560			1570						304				
Starvation Cap Reductn		0			0						0				
Spillback Cap Reductn		0			0						0				
Storage Cap Reductn		0			0						0				
Reduced v/c Ratio		0.83			0.19						0.17				

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 37 (31%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 32.9
 Intersection Capacity Utilization 50.8%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 ! Phase conflict between lane groups.

Splits and Phases: 4: West Carriage Road & Washington Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR	Ø1	Ø2	Ø5
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	↖	↗			
Traffic Volume (vph)	76	308	38	37	277	71	0	727	121	4	143	213	0			
Future Volume (vph)	76	308	38	37	277	71	0	727	121	4	143	213	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width (ft)	12	16	12	12	16	12	12	11	12	12	11	11	12			
Storage Length (ft)	0		0	0		0	0		0		180		0			
Storage Lanes	1		0	1		0	0		0		1		0			
Taper Length (ft)	25			25			25				50					
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	1.00			
Ped Bike Factor	0.80	0.98		0.92	0.93			1.00			0.93					
Frt		0.983			0.969			0.979								
Flt Protected	0.950			0.950							0.950					
Satd. Flow (prot)	1624	1798	0	1577	1693	0	0	3034	0	0	1562	3079	0			
Flt Permitted	0.547			0.546							0.950					
Satd. Flow (perm)	744	1798	0	830	1693	0	0	3034	0	0	1455	3079	0			
Right Turn on Red			Yes			Yes			No				Yes			
Satd. Flow (RTOR)																
Link Speed (mph)		30			30			30				30				
Link Distance (ft)		124			145			645				487				
Travel Time (s)		2.8			3.3			14.7				11.1				
Confl. Peds. (#/hr)	175		50	50		175		4	81	4						
Peak Hour Factor	0.96	0.96	0.96	0.97	0.97	0.97	0.96	0.96	0.96	0.94	0.98	0.98	0.98			
Heavy Vehicles (%)	0%	4%	6%	3%	4%	0%	0%	1%	1%	19%	0%	2%	0%			
Adj. Flow (vph)	79	321	40	38	286	73	0	757	126	4	146	217	0			
Shared Lane Traffic (%)																
Lane Group Flow (vph)	79	361	0	38	359	0	0	883	0	0	150	217	0			
Turn Type	Perm	NA		Perm	NA			NA		Prot	Prot	NA				
Protected Phases		1 2 5 6!			1 2 5 6!			1 2!		6	6!	1 6!		1	2	5
Permitted Phases	1 2 5 6!			1 2 5 6!												
Detector Phase	1 2 5 6	1 2 5 6		1 2 5 6	1 2 5 6			1 2		6	6	1 6				
Switch Phase																
Minimum Initial (s)									6.0	6.0				8.0	5.0	10.0
Minimum Split (s)									21.0	21.0				23.0	20.0	25.0
Total Split (s)									21.0	21.0				23.0	20.0	25.0
Total Split (%)									17.5%	17.5%				19%	17%	47%
Maximum Green (s)									15.0	15.0				17.0	14.0	47.0
Yellow Time (s)									3.0	3.0				3.0	3.0	3.0
All-Red Time (s)									3.0	3.0				3.0	3.0	6.0
Lost Time Adjust (s)														-2.0		
Total Lost Time (s)														4.0		
Lead/Lag									Lag	Lag				Lead	Lag	Lead
Lead-Lag Optimize?									Yes	Yes						
Vehicle Extension (s)									2.0	2.0				2.0	4.0	2.0
Recall Mode									None	None				C-Max	None	None
Walk Time (s)									7.0	7.0				6.0	7.0	7.0
Flash Dont Walk (s)									7.0	7.0				7.0	7.0	9.0
Pedestrian Calls (#/hr)									0	0				0	0	0
Act Effct Green (s)	120.0	120.0		120.0	120.0			42.5			16.3	42.8				
Actuated g/C Ratio	1.00	1.00		1.00	1.00			0.35			0.14	0.36				
v/c Ratio	0.11	0.20		0.05	0.21			0.82			0.71	0.20				
Control Delay	0.2	0.1		0.1	0.2			43.9			68.1	28.2				
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0				
Total Delay	0.2	0.1		0.1	0.2			43.9			68.1	28.2				
LOS	A	A		A	A			D			E	C				
Approach Delay		0.1			0.2			43.9				44.6				
Approach LOS		A			A			D			D					
Queue Length 50th (ft)	0	0		0	0			341			112	63				
Queue Length 95th (ft)	m0	m0		m0	0			#460			#199	94				
Internal Link Dist (ft)		44			65			565				407				
Turn Bay Length (ft)											180					
Base Capacity (vph)	744	1798		830	1693			1075			221	1096				
Starvation Cap Reductn	0	0		0	0			0			0	0				
Spillback Cap Reductn	0	0		0	0			0			0	0				
Storage Cap Reductn	0	0		0	0			0			0	0				
Reduced v/c Ratio	0.11	0.20		0.05	0.21			0.82			0.68	0.20				

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 37 (31%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 26.5
 Intersection Capacity Utilization 78.2%
 Intersection LOS: C
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 5: Commonwealth Avenue & Washington Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø6
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↕	↔	↔	↔		
Traffic Volume (vph)	25	538	0	0	389	7	0	33	65	0	0	0		
Future Volume (vph)	25	538	0	0	389	7	0	33	65	0	0	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Storage Length (ft)	0		0	0		0	0		114	0		0		
Storage Lanes	1		0	0		0	0		1	0		0		
Taper Length (ft)	25			25			25			25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor	0.70				0.99				0.83					
Frt					0.998				0.850					
Flt Protected	0.950													
Satd. Flow (prot)	1624	1644	0	0	1464	0	0	1660	1283	0	0	0		
Flt Permitted	0.523													
Satd. Flow (perm)	624	1644	0	0	1464	0	0	1660	1061	0	0	0		
Right Turn on Red			Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)					1				109					
Link Speed (mph)		30			30				30			30		
Link Distance (ft)		145			359				458			887		
Travel Time (s)		3.3			8.2				10.4			20.2		
Confl. Peds. (#/hr)	175					175			36					
Confl. Bikes (#/hr)									1					
Peak Hour Factor	0.96	0.96	0.96	0.97	0.97	0.97	0.87	0.87	0.87	0.92	0.92	0.92		
Heavy Vehicles (%)	0%	4%	0%	0%	4%	0%	0%	3%	2%	2%	2%	2%		
Parking (#/hr)					0	0			0					
Adj. Flow (vph)	26	560	0	0	401	7	0	38	75	0	0	0		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	26	560	0	0	408	0	0	38	75	0	0	0		
Turn Type	Perm	NA			NA			NA	custom					
Protected Phases		1 2 5 6!			5			1 2!	2!				1	6
Permitted Phases	1 2 5 6!								1					
Detector Phase	1 2 5 6	1 2 5 6			5			1 2	2					
Switch Phase														
Minimum Initial (s)					10.0				5.0				8.0	6.0
Minimum Split (s)					25.0				20.0				23.0	21.0
Total Split (s)					56.0				20.0				23.0	21.0
Total Split (%)					46.7%				16.7%				19%	18%
Maximum Green (s)					47.0				14.0				17.0	15.0
Yellow Time (s)					3.0				3.0				3.0	3.0
All-Red Time (s)					6.0				3.0				3.0	3.0
Lost Time Adjust (s)					0.0				0.0					
Total Lost Time (s)					9.0				6.0					
Lead/Lag					Lead				Lag				Lead	Lag
Lead-Lag Optimize?														Yes
Vehicle Extension (s)					2.0				4.0				2.0	2.0
Recall Mode					None				None				C-Max	None
Walk Time (s)					7.0				7.0				6.0	7.0
Flash Dont Walk (s)					9.0				7.0				7.0	7.0
Pedestrian Calls (#/hr)					0				0				0	0
Act Effct Green (s)	120.0	120.0			44.2			40.5	34.5					
Actuated g/C Ratio	1.00	1.00			0.37			0.34	0.29					
v/c Ratio	0.04	0.34			0.76			0.07	0.18					
Control Delay	0.1	0.6			42.7			29.8	3.1					
Queue Delay	0.0	0.0			0.0			0.0	0.0					
Total Delay	0.1	0.6			42.7			29.8	3.1					
LOS	A	A			D			C	A					
Approach Delay		0.5			42.7			12.1						
Approach LOS		A			D			B						
Queue Length 50th (ft)	0	0			263			21	0					
Queue Length 95th (ft)	m0	m0			387			46	13					
Internal Link Dist (ft)		65			279			378			807			
Turn Bay Length (ft)									114					
Base Capacity (vph)	618	1628			574			560	408					
Starvation Cap Reductn	0	0			0			0	0					
Spillback Cap Reductn	0	0			0			0	0					
Storage Cap Reductn	0	0			0			0	0					
Reduced v/c Ratio	0.04	0.34			0.71			0.07	0.18					














Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 37 (31%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 17.3
 Intersection Capacity Utilization 53.1%
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 6: East Carriage Road & Washington Street



HCM Unsignalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕				↕			↕	
Sign Control		Stop			Yield				Stop			Stop	
Traffic Volume (vph)	7	29	15	29	17	4	1	7	9	1	34	16	20
Future Volume (vph)	7	29	15	29	17	4	1	7	9	1	34	16	20
Peak Hour Factor	0.70	0.70	0.70	0.95	0.95	0.95	0.50	0.50	0.50	0.50	0.95	0.95	0.95
Hourly flow rate (vph)	10	41	21	31	18	4	0	14	18	2	36	17	21
Direction, Lane #	EB 1	WB 1	NB 1	SB 1									
Volume Total (vph)	72	53	34	74									
Volume Left (vph)	10	31	14	36									
Volume Right (vph)	21	4	2	21									
Hadj (s)	-0.15	0.11	0.17	-0.05									
Departure Headway (s)	4.0	4.3	4.4	4.2									
Degree Utilization, x	0.08	0.06	0.04	0.09									
Capacity (veh/h)	860	806	780	836									
Control Delay (s)	7.4	7.6	7.6	7.6									
Approach Delay (s)	7.4	7.6	7.6	7.6									
Approach LOS	A	A	A	A									
Intersection Summary													
Delay				7.5									
Level of Service				A									
Intersection Capacity Utilization			26.5%		ICU Level of Service				A				
Analysis Period (min)			15										

HCM Unsignalized Intersection Capacity Analysis

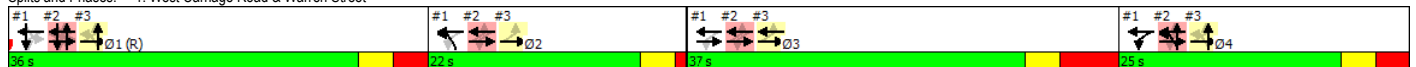
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑		↑↑	↑↑	
Traffic Volume (veh/h)	0	64	0	0	294	50
Future Volume (Veh/h)	0	64	0	0	294	50
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.70	0.70	0.92	0.92	0.81	0.81
Hourly flow rate (vph)	0	91	0	0	363	62
Pedestrians	3					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				487	380	
pX, platoon unblocked						
vC, conflicting volume	397	216	428			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	397	216	428			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	89	100			
cM capacity (veh/h)	584	793	1139			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	91	0	0	242	183	
Volume Left	0	0	0	0	0	
Volume Right	91	0	0	0	62	
cSH	793	1700	1700	1700	1700	
Volume to Capacity	0.11	0.00	0.00	0.14	0.11	
Queue Length 95th (ft)	10	0	0	0	0	
Control Delay (s)	10.1	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	10.1	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization			20.7%	ICU Level of Service	A	
Analysis Period (min)			15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕				↕	↕
Traffic Volume (vph)	0	280	17	21	476	0	36	0	0	170	76	77
Future Volume (vph)	0	280	17	21	476	0	36	0	0	170	76	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.992									0.968	
Fit Protected				0.950			0.950				0.974	
Satd. Flow (prot)	0	1495	0	1624	1693	0	1624	0	0	0	1451	0
Fit Permitted				0.078			0.950				0.974	
Satd. Flow (perm)	0	1495	0	133	1693	0	1624	0	0	0	1451	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		3										
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		307			119			412			462	
Travel Time (s)		7.0			2.7			9.4			10.5	
Confl. Peds. (#/hr)			67	67								
Peak Hour Factor	0.96	0.96	0.96	0.97	0.97	0.97	0.79	0.79	0.79	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Parking (#/hr)		0	0							0	0	0
Adj. Flow (vph)	0	292	18	22	491	0	46	0	0	177	79	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	310	0	22	491	0	46	0	0	0	336	0
Turn Type		NA		custom	NA		Prot			Perm	NA	
Protected Phases		3		4	1 2 3 4!		2!				1!	
Permitted Phases				1 2 3!	1 2!					1!		
Detector Phase		3		4	1 2 3 4		2			1	1	
Switch Phase												
Minimum Initial (s)		8.0		8.0			8.0			8.0	8.0	
Minimum Split (s)		30.0		14.0			12.0			14.0	14.0	
Total Split (s)		37.0		25.0			22.0			36.0	36.0	
Total Split (%)		30.8%		20.8%			18.3%			30.0%	30.0%	
Maximum Green (s)		29.0		19.0			18.0			30.0	30.0	
Yellow Time (s)		3.0		3.0			3.0			3.0	3.0	
All-Red Time (s)		5.0		3.0			1.0			3.0	3.0	
Lost Time Adjust (s)		-4.0		-2.0			0.0			-2.0	-2.0	
Total Lost Time (s)		4.0		4.0			4.0			4.0	4.0	
Lead/Lag		Lead		Lag			Lag			Lead	Lead	
Lead-Lag Optimize?				Yes			Yes					
Vehicle Extension (s)		1.0		1.0			1.0			1.0	1.0	
Recall Mode		None		None			Min			C-Max	C-Max	
Walk Time (s)		8.0										
Flash Dont Walk (s)		14.0										
Pedestrian Calls (#/hr)		104										
Act Effct Green (s)		30.9		112.0	120.0		9.1				46.7	
Actuated g/C Ratio		0.26		0.93	1.00		0.08				0.39	
v/c Ratio		0.80		0.06	0.29		0.37				0.60	
Control Delay		57.5		0.8	0.4		61.1				36.6	
Queue Delay		0.0		0.9	0.0		0.0				0.0	
Total Delay		57.5		1.6	0.4		61.1				36.6	
LOS		E		A	A		E				D	
Approach Delay		57.5			0.5			61.1			36.6	
Approach LOS		E			A			E			D	
Queue Length 50th (ft)		218		0	0		35				209	
Queue Length 95th (ft)		#346		m2	0		63				346	
Internal Link Dist (ft)		227			39			332			382	
Turn Bay Length (ft)												
Base Capacity (vph)		413		387	1681		243				564	
Starvation Cap Reductn		0		263	0		0				0	
Spillback Cap Reductn		0		0	0		0				0	
Storage Cap Reductn		0		0	0		0				0	
Reduced v/c Ratio		0.75		0.18	0.29		0.19				0.60	

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 70 (58%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 27.5
 Intersection LOS: C
 Intersection Capacity Utilization 52.5%
 ICU Level of Service A
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 1: West Carriage Road & Warren Street

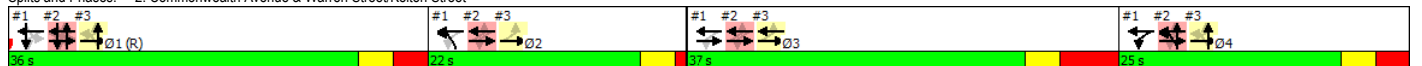


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2	Ø3
Lane Configurations	↔	↕		↔	↕			↕			↕			
Traffic Volume (vph)	57	164	229	11	226	8	170	379	25	9	372	105		
Future Volume (vph)	57	164	229	11	226	8	170	379	25	9	372	105		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	11	12	12	11	12	12	12	12	12	12	12		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95		
Ped Bike Factor	0.99	0.99		0.99	1.00									
Frt		0.913			0.995			0.993			0.968			
Fit Protected	0.950			0.950				0.985			0.999			
Satd. Flow (prot)	1593	1482	0	1624	1644	0	0	3148	0	0	3118	0		
Fit Permitted	0.609			0.522				0.632			0.942			
Satd. Flow (perm)	1014	1482	0	887	1644	0	0	2020	0	0	2940	0		
Right Turn on Red			No			No			Yes			No		
Satd. Flow (RTOR)								5						
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		119			126			1051			519			
Travel Time (s)		2.7			2.9			23.9			11.8			
Confl. Peds. (#/hr)	30		37	37		30								
Peak Hour Factor	0.96	0.96	0.96	0.97	0.97	0.97	0.96	0.96	0.96	0.98	0.98	0.98		
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	1%	1%	0%	0%	1%	0%		
Adj. Flow (vph)	59	171	239	11	233	8	177	395	26	9	380	107		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	59	410	0	11	241	0	0	598	0	0	496	0		
Turn Type	Perm	NA		Perm	NA		D,P+P	NA		Perm	NA			
Protected Phases		1 2 3 4!			1 2 3 4!		4!	1 4!			1!		2	3
Permitted Phases	1 2 3 4!			1 2 3 4!			1!			1!				
Detector Phase	1 2 3 4	1 2 3 4		1 2 3 4	1 2 3 4		4	1 4		1	1			
Switch Phase														
Minimum Initial (s)							8.0		8.0	8.0			8.0	8.0
Minimum Split (s)							14.0		14.0	14.0			12.0	30.0
Total Split (s)							25.0		36.0	36.0			22.0	37.0
Total Split (%)							20.8%		30.0%	30.0%			18%	31%
Maximum Green (s)							19.0		30.0	30.0			18.0	29.0
Yellow Time (s)							3.0		3.0	3.0			3.0	3.0
All-Red Time (s)							3.0		3.0	3.0			1.0	5.0
Lost Time Adjust (s)													-2.0	
Total Lost Time (s)													4.0	
Lead/Lag							Lag		Lead	Lead			Lag	Lead
Lead-Lag Optimize?							Yes						Yes	
Vehicle Extension (s)							1.0		1.0	1.0			1.0	1.0
Recall Mode							None		C-Max	C-Max			Min	None
Walk Time (s)														8.0
Flash Dont Walk (s)														14.0
Pedestrian Calls (#/hr)														104
Act Effct Green (s)	120.0	120.0		120.0	120.0			64.0			46.7			
Actuated g/C Ratio	1.00	1.00		1.00	1.00			0.53			0.39			
v/c Ratio	0.06	0.28		0.01	0.15			0.48			0.43			
Control Delay	0.1	0.3		0.0	0.1			15.9			30.0			
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0			
Total Delay	0.1	0.3		0.0	0.1			15.9			30.0			
LOS	A	A		A	A			B			C			
Approach Delay		0.3			0.1			15.9			30.0			
Approach LOS		A			A			B			C			
Queue Length 50th (ft)	0	0		0	0			125			150			
Queue Length 95th (ft)	m0	0		m0	0			178			222			
Internal Link Dist (ft)		39			46			971			439			
Turn Bay Length (ft)														
Base Capacity (vph)	1007	1472		881	1632			1318			1144			
Starvation Cap Reductn	0	0		0	0			0			0			
Spillback Cap Reductn	0	0		0	0			0			0			
Storage Cap Reductn	0	0		0	0			0			0			
Reduced v/c Ratio	0.06	0.28		0.01	0.15			0.45			0.43			

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 70 (58%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 13.5
 Intersection LOS: B
 Intersection Capacity Utilization 80.5%
 ICU Level of Service D
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 2: Commonwealth Avenue & Warren Street/Kelton Street

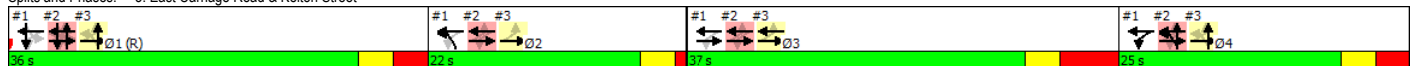


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø4
Lane Configurations	↔	↕			↕			↕							
Traffic Volume (vph)	20	178	0	0	244	10	1	8	7	0	0	0			
Future Volume (vph)	20	178	0	0	244	10	1	8	7	0	0	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane 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				1.00										
Frt					0.995			0.941							
Fit Protected	0.950							0.998							
Satd. Flow (prot)	1593	1693	0	0	1525	0	0	1445	0	0	0	0			
Fit Permitted	0.540							0.998							
Satd. Flow (perm)	866	1693	0	0	1525	0	0	1445	0	0	0	0			
Right Turn on Red			Yes			Yes			Yes			Yes			
Satd. Flow (RTOR)					2			10							
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		126			367			366			364				
Travel Time (s)		2.9			8.3			8.3			8.3				
Confl. Peds. (#/hr)	30					30									
Peak Hour Factor	0.96	0.96	0.96	0.98	0.98	0.98	0.68	0.68	0.68	0.92	0.92	0.92			
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%			
Parking (#/hr)					0	0	0	0	0						
Adj. Flow (vph)	21	185	0	0	249	10	1	12	10	0	0	0			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	21	185	0	0	259	0	0	23	0	0	0	0			
Turn Type	Perm	NA			NA		Perm	NA							
Protected Phases		1 2 3 4!			3			1 4!					1	2	4
Permitted Phases	1 2 3 4!						1 4!								
Detector Phase	1 2 3 4	1 2 3 4			3		1 4	1 4							
Switch Phase															
Minimum Initial (s)					8.0								8.0	8.0	8.0
Minimum Split (s)					30.0								14.0	12.0	14.0
Total Split (s)					37.0								36.0	22.0	25.0
Total Split (%)					30.8%								30%	18%	21%
Maximum Green (s)					29.0								30.0	18.0	19.0
Yellow Time (s)					3.0								3.0	3.0	3.0
All-Red Time (s)					5.0								3.0	1.0	3.0
Lost Time Adjust (s)					-4.0										
Total Lost Time (s)					4.0										
Lead/Lag					Lead								Lead	Lag	Lag
Lead-Lag Optimize?														Yes	Yes
Vehicle Extension (s)					1.0								1.0	1.0	1.0
Recall Mode					None								C-Max	Min	None
Walk Time (s)					8.0										
Flash Dont Walk (s)					14.0										
Pedestrian Calls (#/hr)					104										
Act Effct Green (s)	120.0	120.0			30.9			68.0							
Actuated g/C Ratio	1.00	1.00			0.26			0.57							
v/c Ratio	0.02	0.11			0.66			0.03							
Control Delay	0.1	0.1			48.0			9.2							
Queue Delay	0.0	0.0			0.0			0.0							
Total Delay	0.1	0.1			48.0			9.2							
LOS	A	A			D			A							
Approach Delay		0.1			48.0			9.2							
Approach LOS		A			D			A							
Queue Length 50th (ft)	0	0			174			4							
Queue Length 95th (ft)	m0	0			267			13							
Internal Link Dist (ft)		46			287			286			284				
Turn Bay Length (ft)															
Base Capacity (vph)	860	1681			420			814							
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	0.02	0.11			0.62			0.03							

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 70 (58%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 26.0
 Intersection Capacity Utilization 31.8%
 Intersection LOS: C
 ICU Level of Service A
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Splits and Phases: 3: East Carriage Road & Kelton Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø2	Ø6
Lane Configurations		↕			↕						↕				
Traffic Volume (vph)	4	410	12	12	283	17	0	0	0	0	31	42			
Future Volume (vph)	4	410	12	12	283	17	0	0	0	0	31	42			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
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			0.97						0.90				
Frt		0.996			0.993						0.922				
Fit Protected					0.998										
Satd. Flow (prot)	0	1479	0	0	1613	0	0	0	0	0	1276	0			
Fit Permitted		0.979			0.982										
Satd. Flow (perm)	0	1448	0	0	1578	0	0	0	0	0	1276	0			
Right Turn on Red			Yes			Yes			Yes			No			
Satd. Flow (RTOR)		1													
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		1136			151			491			526				
Travel Time (s)		25.8			3.4			11.2			12.0				
Confl. Peds. (#/hr)	126		67	67		126						50			
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.92			
Heavy Vehicles (%)	0%	3%	0%	0%	3%	0%	2%	2%	2%	0%	0%	0%			
Parking (#/hr)	0	0	0							0	0	0			
Adj. Flow (vph)	4	446	13	13	295	18	0	0	0	0	34	46			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	463	0	0	326	0	0	0	0	0	80	0			
Turn Type	Perm	NA		Perm	NA						NA				
Protected Phases		5			1 2 5 6!						16!		1	2	6
Permitted Phases	5			1 2 5 6!											
Detector Phase	5	5		1 2 5 6	1 2 5 6						16				
Switch Phase															
Minimum Initial (s)	10.0	10.0											8.0	5.0	6.0
Minimum Split (s)	25.0	25.0											25.0	20.0	21.0
Total Split (s)	54.0	54.0											25.0	20.0	21.0
Total Split (%)	45.0%	45.0%											21%	17%	18%
Maximum Green (s)	45.0	45.0											19.0	14.0	15.0
Yellow Time (s)	3.0	3.0											3.0	3.0	3.0
All-Red Time (s)	6.0	6.0											3.0	3.0	3.0
Lost Time Adjust (s)															
Total Lost Time (s)															
Lead/Lag	Lead	Lead											Lead	Lag	Lag
Lead-Lag Optimize?															Yes
Vehicle Extension (s)	2.0	2.0											2.0	4.0	2.0
Recall Mode	None	None											C-Max	None	None
Walk Time (s)	7.0	7.0											7.0	7.0	7.0
Flash Dont Walk (s)	9.0	9.0											12.0	7.0	7.0
Pedestrian Calls (#/hr)	0	0											0	0	0
Act Effct Green (s)		47.4			120.0						44.9				
Actuated g/C Ratio		0.40			1.00						0.37				
v/c Ratio		0.81			0.21						0.17				
Control Delay		44.3			0.3						27.8				
Queue Delay		0.0			0.0						0.0				
Total Delay		44.3			0.3						27.8				
LOS		D			A						C				
Approach Delay		44.3			0.3						27.8				
Approach LOS		D			A						C				
Queue Length 50th (ft)		302			0						43				
Queue Length 95th (ft)		443			0						82				
Internal Link Dist (ft)		1056			71			411			446				
Turn Bay Length (ft)															
Base Capacity (vph)		603			1566						477				
Starvation Cap Reductn		0			0						0				
Spillback Cap Reductn		0			0						0				
Storage Cap Reductn		0			0						0				
Reduced v/c Ratio		0.77			0.21						0.17				

Intersection Summary

Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 23 (19%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 26.3
 Intersection LOS: C
 Intersection Capacity Utilization 49.1%
 ICU Level of Service A
 Analysis Period (min) 15
 ! Phase conflict between lane groups.

Splits and Phases: 4: West Carriage Road & Washington Street



Synchro 9 Report
Lanes, Volumes, Timings

5: Commonwealth Avenue/Commonwealth Ave & Washington Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR	Ø1	Ø2	Ø5	
Lane Configurations																	
Traffic Volume (vph)	60	299	25	46	293	35	0	355	107	3	173	422	0				
Future Volume (vph)	60	299	25	46	293	35	0	355	107	3	173	422	0				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900				
Lane Width (ft)	12	16	12	12	16	12	12	11	12	12	11	11	12				
Storage Length (ft)	0		0	0		0	0		0		180		0				
Storage Lanes	1		0	1		0	0		0		1		0				
Taper Length (ft)	25			25			25				25						
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	1.00				
Ped Bike Factor	0.85	0.99		0.92	0.97			1.00			0.84						
Frt		0.988			0.984			0.965									
Flt Protected	0.950			0.950							0.950						
Satd. Flow (prot)	1624	1834	0	1624	1824	0	0	2972	0	0	1570	3110	0				
Flt Permitted	0.554			0.550							0.950						
Satd. Flow (perm)	807	1834	0	867	1824	0	0	2972	0	0	1325	3110	0				
Right Turn on Red			Yes			Yes		No					Yes				
Satd. Flow (RTOR)																	
Link Speed (mph)		30		30			30				30						
Link Distance (ft)		151		146			543				536						
Travel Time (s)		3.4		3.3			12.3				12.2						
Confl. Peds. (#/hr)	126		67	67		126				159							
Confl. Bikes (#/hr)									1								
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.98	0.98	0.98	0.94	0.94	0.94	0.94				
Heavy Vehicles (%)	0%	3%	7%	0%	2%	0%	0%	1%	4%	0%	0%	1%	0%				
Adj. Flow (vph)	65	325	27	48	308	37	0	362	109	3	184	449	0				
Shared Lane Traffic (%)																	
Lane Group Flow (vph)	65	352	0	48	345	0	0	471	0	0	187	449	0				
Turn Type	Perm	NA		Perm	NA			Prot		Prot	Prot	NA	NA				
Protected Phases		1 2 5 6!			1 2 5 6!			1 2!			6	6!	1 6!		1	2	5
Permitted Phases	1 2 5 6!			1 2 5 6!													
Detector Phase	1 2 5 6	1 2 5 6		1 2 5 6	1 2 5 6			1 2			6	6	1 6				
Switch Phase																	
Minimum Initial (s)										6.0	6.0			8.0	5.0	10.0	
Minimum Split (s)										21.0	21.0			25.0	20.0	25.0	
Total Split (s)										21.0	21.0			25.0	20.0	54.0	
Total Split (%)										17.5%	17.5%			21%	17%	45%	
Maximum Green (s)										15.0	15.0			19.0	14.0	45.0	
Yellow Time (s)										3.0	3.0			3.0	3.0	3.0	
All-Red Time (s)										3.0	3.0			3.0	3.0	6.0	
Lost Time Adjust (s)																-2.0	
Total Lost Time (s)																4.0	
Lead/Lag										Lag	Lag			Lead	Lag	Lead	
Lead-Lag Optimize?										Yes	Yes						
Vehicle Extension (s)										2.0	2.0			2.0	4.0	2.0	
Recall Mode										None	None			C-Max	None	None	
Walk Time (s)										7.0	7.0			7.0	7.0	7.0	
Flash Dont Walk (s)										7.0	7.0			12.0	7.0	9.0	
Pedestrian Calls (#/hr)										0	0			0	0	0	
Act Effct Green (s)	120.0	120.0		120.0	120.0			43.6			17.0	44.9					
Actuated g/C Ratio	1.00	1.00		1.00	1.00			0.36			0.14	0.37					
v/c Ratio	0.08	0.19		0.06	0.19			0.44			0.84	0.39					
Control Delay	0.1	0.1		0.1	0.2			31.2			81.3	29.5					
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.0					
Total Delay	0.1	0.1		0.1	0.2			31.2			81.3	29.5					
LOS	A	A		A	A			C			F	C					
Approach Delay					0.2			31.2				44.7					
Approach LOS					A			C				D					
Queue Length 50th (ft)	0	0		0	0			149			143	137					
Queue Length 95th (ft)	m0	m0		m0	0			200			#270	186					
Internal Link Dist (ft)		71			66			463				456					
Turn Bay Length (ft)											180						
Base Capacity (vph)	801	1820		860	1810			1086			222	1163					
Starvation Cap Reductn	0	0		0	0			0			0	0					
Spillback Cap Reductn	0	0		0	0			0			0	0					
Storage Cap Reductn	0	0		0	0			0			0	0					
Reduced v/c Ratio	0.08	0.19		0.06	0.19			0.43			0.84	0.39					

Intersection Summary
 Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 23 (19%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 22.6
 Intersection LOS: C
 Intersection Capacity Utilization 65.7%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø6
Lane Configurations	↖	↗			↖			↗	↖	↗				
Traffic Volume (vph)	19	563	0	0	397	13	0	24	42	0	0	0		
Future Volume (vph)	19	563	0	0	397	13	0	24	42	0	0	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Storage Length (ft)	0		0	0		0	0		114	0		0		
Storage Lanes	1		0	0		0	0		1	0		0		
Taper Length (ft)	25			25			25			25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Ped Bike Factor	0.74				0.98				0.82					
Frt					0.996				0.850					
Flt Protected	0.950													
Satd. Flow (prot)	1624	1676	0	0	1480	0	0	1710	1308	0	0	0		
Flt Permitted	0.511													
Satd. Flow (perm)	647	1676	0	0	1480	0	0	1710	1066	0	0	0		
Right Turn on Red			Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)				2					109					
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		146			345			669			869			
Travel Time (s)		3.3			7.8			15.2			19.8			
Confl. Peds. (#/hr)	126					126			39					
Confl. Bikes (#/hr)									1					
Peak Hour Factor	0.96	0.96	0.96	0.95	0.95	0.95	0.71	0.71	0.71	0.92	0.92	0.92		
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	2%	2%	2%		
Parking (#/hr)					0	0			0					
Adj. Flow (vph)	20	586	0	0	418	14	0	34	59	0	0	0		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	20	586	0	0	432	0	0	34	59	0	0	0		
Turn Type	Perm	NA			NA			NA	custom					
Protected Phases		1 2 5 6!			5			1 2!	2!				1	6
Permitted Phases	1 2 5 6!													
Detector Phase	1 2 5 6	1 2 5 6			5			1 2	2					
Switch Phase														
Minimum Initial (s)					10.0				5.0				8.0	6.0
Minimum Split (s)					25.0				20.0				25.0	21.0
Total Split (s)					54.0				20.0				25.0	21.0
Total Split (%)					45.0%				16.7%				21%	18%
Maximum Green (s)					45.0				14.0				19.0	15.0
Yellow Time (s)					3.0				3.0				3.0	3.0
All-Red Time (s)					6.0				3.0				3.0	3.0
Lost Time Adjust (s)					-5.0				-2.0					
Total Lost Time (s)					4.0				4.0					
Lead/Lag					Lead				Lag				Lead	Lag
Lead-Lag Optimize?														Yes
Vehicle Extension (s)					2.0				4.0				2.0	2.0
Recall Mode					None				None				C-Max	None
Walk Time (s)					7.0				7.0				7.0	7.0
Flash Dont Walk (s)					9.0				7.0				12.0	7.0
Pedestrian Calls (#/hr)					0				0				0	0
Act Effct Green (s)	120.0	120.0			47.4				43.6	39.6				
Actuated g/C Ratio	1.00	1.00			0.40				0.36	0.33				
v/c Ratio	0.03	0.35			0.74				0.05	0.13				
Control Delay	0.1	0.6			39.1				26.9	1.0				
Queue Delay	0.0	0.0			0.0				0.0	0.0				
Total Delay	0.1	0.6			39.1				26.9	1.0				
LOS	A	A			D				C	A				
Approach Delay		0.6			39.1				10.4					
Approach LOS		A			D				B					
Queue Length 50th (ft)	0	0			270				18	0				
Queue Length 95th (ft)	0	m0			395				33	0				
Internal Link Dist (ft)		66			265				589			789		
Turn Bay Length (ft)									114					
Base Capacity (vph)	642	1663			617				625	459				
Starvation Cap Reductn	0	0			0				0	0				
Spillback Cap Reductn	0	0			0				0	0				
Storage Cap Reductn	0	0			0				0	0				
Reduced v/c Ratio	0.03	0.35			0.70				0.05	0.13				

Intersection Summary



















Area Type: CBD
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 23 (19%), Referenced to phase 1:WBSB, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 16.1
 Intersection Capacity Utilization 55.4%
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.
 ! Phase conflict between lane groups.

Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 6: East Carriage Road & Washington Street



HCM Unsignalized Intersection Capacity Analysis

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations														
Sign Control		Stop			Yield				Stop			Stop		
Traffic Volume (vph)	16	23	20	45	27	17	2	5	12	4	42	26	14	
Future Volume (vph)	16	23	20	45	27	17	2	5	12	4	42	26	14	
Peak Hour Factor	0.75	0.75	0.75	0.96	0.96	0.96	0.90	0.90	0.90	0.90	0.97	0.97	0.97	
Hourly flow rate (vph)	21	31	27	47	28	18	0	6	13	4	43	27	14	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1										
Volume Total (vph)	79	93	23	84										
Volume Left (vph)	21	47	6	43										
Volume Right (vph)	27	18	4	14										
Hadj (s)	-0.15	-0.02	-0.05	0.00										
Departure Headway (s)	4.1	4.2	4.3	4.3										
Degree Utilization, x	0.09	0.11	0.03	0.10										
Capacity (veh/h)	850	830	789	793										
Control Delay (s)	7.5	7.7	7.4	7.8										
Approach Delay (s)	7.5	7.7	7.4	7.8										
Approach LOS	A	A	A	A										
Intersection Summary														
Delay				7.7										
Level of Service				A										
Intersection Capacity Utilization			27.8%		ICU Level of Service				A					
Analysis Period (min)			15											

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑		↑↑	↑↑	
Traffic Volume (veh/h)	0	69	0	0	523	89
Future Volume (Veh/h)	0	69	0	0	523	89
Sign Control	Yield			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.92	0.92	0.96	0.96
Hourly flow rate (vph)	0	92	0	0	545	93
Pedestrians	2					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)				536		
pX, platoon unblocked						
vC, conflicting volume	594	321	640			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	594	321	640			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	86	100			
cM capacity (veh/h)	440	680	952			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	92	0	0	363	275	
Volume Left	0	0	0	0	0	
Volume Right	92	0	0	0	93	
cSH	680	1700	1700	1700	1700	
Volume to Capacity	0.14	0.00	0.00	0.21	0.16	
Queue Length 95th (ft)	12	0	0	0	0	
Control Delay (s)	11.1	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	11.1	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			28.3%	ICU Level of Service	A	
Analysis Period (min)			15			